APPLICATION OF

DUKE ENERGY WYTHE, LLC **CASE NO. PUE-2001-00721**

For permission to construct and operate an electrical generating facility

REPORT OF MICHAEL D. THOMAS, HEARING EXAMINER

January 27, 2003

HISTORY OF THE CASE

On December 27, 2001, Duke Energy Wythe, LLC ("Duke Energy Wythe" or the "Company") applied to the State Corporation Commission ("Commission"), pursuant to Rule 5:15(a) of the Commission's Rules of Practice and Procedure, for a certificate of public convenience and necessity ("CPCN") under Va. Code § 56-265.2; for an exemption from the provisions of Chapter 10 of Title 56 pursuant to Va. Code § 56-265.2.B; and for interim approval to make financial commitments and undertake preliminary construction work pursuant to Va. Code § 56-234.3.

Duke Energy Wythe is a limited liability company organized under the laws of the State of Delaware and registered with the Commission pursuant to Va. Code § 13.1-1052. Duke Energy Wythe is a wholly owned subsidiary of Duke Energy North America, LLC ("DENA"). The Company proposes to build a 620 MW natural gas-fired combined-cycle electric generating plant (the "Facility") to commence commercial operation by the end of the second quarter of 2004. Natural gas for the Facility will be supplied from the Patriot Extension which East Tennessee Natural Gas ("ETNG"), an affiliate of DENA, proposes to build through the project site. An interconnection, consisting of a tap and a lateral pipe to the meter station, will be constructed on the project site to supply the gas from the Patriot Extension to the Facility.

Duke Energy Wythe proposes to interconnect the Facility with the American Electric Power, Inc. ("AEP") 765 kV Jackson's Ferry Substation, which is approximately one-half mile away. The project site adjoins the AEP substation site. Interconnection facilities will be built to connect the Facility to AEP's transmission system.

Duke Energy Wythe proposes to obtain water for the Facility from the Austinville Mine, a former lead and zinc mine located approximately five miles from the Facility. The mine ceased operation about 20 years ago and is now filled with water. A twenty-inch pipeline will be constructed from the mine to the project site to supply raw water, and an eight-inch return pipe will be constructed in the same trench to return wastewater from the Facility to the mine. Wythe County will provide water transportation services for the Company. The Company anticipates that it will

use approximately seven million gallons of water per day and return approximately one million gallons of treated effluent per day back to the mine.

The electricity generated by the Facility will be sold on a wholesale basis to DENA affiliates and the Company will not provide retail electric service to customers in Virginia. No utility with rates regulated under Chapter 10 of Title 56 has a financial ownership interest in the Company.

On February 12, 2002, the Commission issued its Order for Notice and Hearing. In that Order, the Commission noted that on January 1, 2002, Va. Code § 56-580 D became applicable to applications for the construction and operation of generating facilities and that Duke Energy Wythe's application would be treated as if filed under Va. Code § 56-580 D.[1] The Commission docketed the Company's application; scheduled the application for hearing; directed the Company to provide public notice of the application; established dates for the filing of written comments, notices of participation, prepared testimony and exhibits; assigned the matter to a hearing examiner; advised the Company that construction of permanent facilities may not be undertaken absent the Commission's approval; and authorized the Company to undertake, at its own risk, preliminary site preparation and construction activities.

On March 27, 2002, and March 28, 2002, respectively, the Friends of the Rivers of Virginia ("FORVA") and the National Committee for the New River ("NCNR") filed comments in this case and requested a local hearing to accommodate the citizens of Wythe and Carroll Counties who wished to comment on the Company's application. By Hearing Examiner's Ruling entered on April 11, 2002, two local hearings were scheduled for May 29, 2002, at 2:00 p.m. and 7:00 p.m., to receive comments from public witnesses.

On April 12, 2002, the NCNR filed a Request for Respondent Status. NCNR chose not to proceed as a Respondent, but rather appeared as a public witness at the May 29, 2002, public hearing, and the June 25, 2002, evidentiary hearing.

On May 29, 2002, the local hearings for public witnesses were convened as scheduled. The Company appeared by its counsel Guy T. Tripp III, Esquire, and Kevin J. Finto, Esquire. The Commission's Divisions of Energy Regulation, and Economics and Finance (the "Staff") appeared by their counsel Marta B. Curtis, Esquire. A total of 42 public witnesses appeared at the two hearings.

The evidentiary hearing on Duke Energy Wythe's application was heard on June 25-26, 2002. The Company appeared by its counsel Guy T. Tripp III, Esquire; Kevin J. Finto, Esquire; and John M. Holloway, Esquire. The Staff appeared by its counsel William H. Chambliss, Esquire, and Marta B. Curtis, Esquire. Ten public witnesses testified at the evidentiary hearing. At the conclusion of the hearing, the parties were directed to file a joint issues statement identifying for the Commission the issues that need to be addressed in this case. The parties were further provided an opportunity to file post-hearing briefs.

[1] In its Order dated August 3, 2001, in Case No. PUE010313, the Commission determined that effective January 1, 2002, the Virginia Electric Utility Restructuring Act, Va. Code §§ 56-576 et seq. supplants Va. Code §§ 56-265.2 and 56-234.3. The permitting of the construction and operation of electrical generating facilities, including the proposed Facility, is thus now governed by Va. Code § 56-580 D.

Duke Energy Wythe and the Staff filed a Joint Issues Report on July 22, 2002, setting forth the issues raised by public witnesses, the Hearing Examiner, and the Staff. Duke Energy Wythe and the Staff also filed post-hearing briefs on August 19, 2002. With its post-hearing brief, Duke Energy Wythe moved to supplement the record to include the pre-draft Prevention of Significant Deterioration ("PSD") air permit as Exhibit 23, and to reserve Exhibit 24 for the final PSD permit. That motion was granted by Hearing Examiner's Ruling entered on October 22, 2002. A copy of the transcripts is being filed with this Report.

SUMMARY OF THE EVIDENCE

Written Comments

Pursuant to the Commission's Order for Notice and Hearing, comments on the Company's application were due to be filed with the Clerk of the Commission on or before April 12, 2002. The Blue Ridge Coalition ("Coalition") and the FORVA filed timely written comments.[2]

The Coalition represents 5,000+ citizens who signed petitions in opposition to the Patriot Extension proposed by ETNG. Its members are also opposed to the electric generating facility proposed in this case. The Coalition requested that the Commission deny the application on the grounds that the Facility is not beneficial to or in the best interests of the citizens of Southwest Virginia.

FORVA raised five issues for the Commission's consideration. First, it believes the withdrawal of water from the Austinville Mine will affect flows in the New River. FORVA asks the Commission to ensure that a study is done to determine the connectivity of the withdrawals from the Austinville Mine to the flows in the New River, especially during low flow periods. Second, alternate cooling technologies exist that use less water. The Company should present the comparative costs and benefits of these systems for public information. Third, FORVA believes the Commission should require the Department of Environmental Quality ("DEQ") to do a minimum in-stream flow study for recreation on the New River at various locations downstream of the proposed site. The citizens of Virginia should know if the number of days of recreational flows for boating, canoeing, kayaking, tubing, rafting, swimming or wading would be reduced if the Facility were built. The number of days with adequate flows is already reduced due to cumulative withdrawals by various off-stream users all along the New River, as well as natural drought cycles. Fourth, FORVA would like the Commission to require a minimum in-stream flow study for the New River fishery at various locations downstream of the proposed site. The impact on the fishery should be analyzed to determine whether sportsmen, outfitters, tourist businesses, and state parks would be affected. Finally, FORVA is concerned that adequate studies of the potential chemical,

[2] Written comments were also received from H. W. Rowlor, Jr.; Jim Lilly; Eva P. Ingle; Priscilla Melesco; Dan Geren; Ralph & Inez Roop; William S. Greybeal; Donna W. Coleman; Robert G. Dyck; Gary D. Knipling; David M. Bernard; Curtis A. Clay; L. Edwin Heath; Mary R. Justus; Elizabeth A. Ritchey; Gayle Cox; Sherry Hoffman; Jay Stone; William M. Blankenship; Delegate Mary Pearl Compton, a member of the West Virginia House of Delegates; and the Virginia Department of Conservation and Recreation. These comments, however, were not timely filed and were not considered in the determination of this case.

biological, and thermal pollution have not been done. FORVA requests that the studies be done before the Commission approves Duke Energy Wythe's application.

Testimony of Public Witnesses

A. May 29, 2002, Public Hearing.

Forty-two public witnesses testified at the hearing held on May 29, 2002, in Wythe County. Five public witnesses supported the Facility, twenty-six opposed it, and ten witnesses had general comments neither for nor against construction of the Facility.

Ms. Joan Bolduc lives in Wytheville, Virginia. She is concerned about the Facility's environmental impact on the New River Trail State Park at Foster Falls (the "State Park") and the New River. The New River Trail is located near the site of the proposed Facility and is used by people specifically seeking peace and quiet. She believes the area should remain as it is. Ms. Bolduc is also concerned with the Facility's water withdrawals, whether from the New River or the Austinville Mine, and the Facility's lack of return water flow. The New River is already low due to several years of drought and she believes it should not be reduced to a trickle. The State Park and the New River generate approximately $17 million in revenue for the area. Ms. Bolduc believes the Duke Energy Wythe proposal unnecessarily threatens this valuable environmental and economic resource. (Tr. at 6-7).

Mr. Richard Roth lives in Blacksburg, Virginia, and testified on behalf of FORVA. FORVA is not opposed in principle to the proposed Facility. However, it believes there are too many unknowns related to the Facility's impact on the New River and on the ecological and recreational values associated with the river, for the Commission to approve the application. Mr. Roth outlined FORVA's concerns. First, what percentage of the water withdrawn from the Austinville Mine would come from the New River? He believes the water for the Facility will eventually be withdrawn from the river. Second, what impact would the Company's water withdrawals, especially during low-flow periods, have on fish, wildlife, and recreation? Third, what are the minimum in-stream flows needed to protect these beneficial uses? When questioned from the bench, Mr. Roth was unaware of any minimum in-stream flow study that has been done for the New River. Finally, what would be the cumulative impact of the Company's water withdrawals with other proposed and reasonably foreseeable withdrawals? Mr. Roth urged the Commission to deny the Company's application until the Commission and the public are provided with scientifically defensible answers to these questions. (Tr. at 9-11).

Mr. Cecil Jackson, who also lives in Wytheville, Virginia, testified he was neither for nor against the proposed Facility. He believes electricity and water are both important to society. Mr. Jackson questioned why the Facility could not recapture and recycle all the water it would use. He compared the Facility to an automobile. The water in an automobile's radiator is used for cooling and is not lost through evaporation. Mr. Jackson suggested that the water used by the Facility should also be recycled, rather than wasted. (Tr. at 14-15).

Mr. Thomas I. Roberts, P.E., a resident of Blacksburg, Virginia, testified at both the 2:00 p.m. and 7:00 p.m. hearings. Mr. Roberts is a professional engineer with over 17 years of experience designing and checking site plans. In addition, Mr. Roberts and his family are regular part-time residents of the State Park. This year they have spent over $500.00 for camping and use fees at the park. He indicated that he generally supports the building of gas-fired power plants since their overall pollution levels are less than coal-fired plants. However, Mr. Roberts believes that, where possible, gas plants should be designed in a manner that minimizes adverse environmental impacts on the local population and surrounding environment. (Tr. at 15-17).

Mr. Roberts voiced several concerns with Duke Energy Wythe's application. He believes the maps contained in the application provide insufficient detail of the area surrounding the Facility and are difficult for members of the general public to use and understand. He stated the Company could have used the detailed printed and digital maps of the area available from Wythe County to make its application more complete and easier to understand. He noted that the Company's environmental assessment was not signed or sealed by a professional engineer. (Tr. at 17-21). Mr. Roberts also believes the Company did not address satisfactorily the impact of the Facility on the State Park or the nearby Jackson Memorial Elementary School, and that the application should have been carefully tailored to address the unique environmental concerns of Foster Falls and the New River. In his opinion, certain generic minimum standards may not be sufficient in all locations to protect the public health, safety, and welfare. He also stated that Duke Energy Wythe failed to address adequately the fact that the area of the proposed Facility is heavily karst.[3] Mr. Roberts noted the application contains no mention that the water source for the Facility is an abandoned lead mine. (Tr. at 21-24).

Mr. Roberts has significant concerns about Duke Energy Wythe withdrawing water containing lead from the Austinville Mine and discharging it in such close proximity -- 820 yards -- to the New River. He believes that due to the geology of the area, water drawn from the mine will inevitably come from the New River itself. Therefore, Mr. Roberts proposes that Duke Energy Wythe explore alternative sources of water and, as a condition of approval, the Company perform a thorough geo-technical and hydro-geological study. (Tr. at 26). Specifically, Mr. Roberts proposed the construction of two on-site cooling ponds. These ponds will enable the Company to avoid transporting the water five miles between the Facility and the mine. Mr. Roberts proposes extensive groundwater testing in 30 locations within a three-kilometer radius to ensure that there has been no increase in lead concentrations in the area surrounding the Facility. (Tr. at 23-31).

To ensure that air quality is not compromised by the Facility, Mr. Roberts proposes that the Commission condition a certificate on Duke Energy Wythe installing an air monitoring station at Foster Falls. He expressed particular concern over the possibility of a temperature inversion occurring in the area and the level of pollutants increasing significantly because of the Facility's continued operations.[4] Mr. Roberts also raised concerns about noise and light pollution from the Facility. The Company's environmental assessment contained a statement that the Facility complied with federal noise requirements, and made no mention of light pollution. Mr. Roberts

[3] Karst topography is defined as an area of irregular limestone in which erosion has produced fissures, sinkholes, underground streams, and caverns.

[4] A temperature inversion would cause the Facility's pollutants to remain in the general area rather than be dispersed by the prevailing winds.

would like to see a more in-depth noise study to determine whether the Facility will be heard at the State Park. Additionally, he suggested a lighting plan that would prevent lighting glare upward and to the north in the direction of the park. (Tr. at 31-33).

Mr. Roberts expressed concern over the access road Duke Energy Wythe proposes to use to service the Facility. The current access route is very narrow; it is located between Route 608 and Route 52. School bus traffic and State Park visitor traffic use this road. Because the road is so narrow, Mr. Roberts believes the combined traffic from the Company, school buses, and park visitors will create unsafe conditions. Therefore, Mr. Roberts requests assistance from VDOT to create and monitor a separate industrial access road between Routes 608 and 52. (Tr. at 34-35). In Mr. Roberts' rebuttal testimony, he reiterated his earlier statements that the service road used by the Company is unsafe for construction purposes and that using lead-laced water and then evaporating it is harmful to the environment. (Tr. at 148-50).

Mr. James E. Hagee, a resident of Max Meadows, is a member of the Wythe County Board of Supervisors and represents the Lead Mines District. He responded to several points in Mr. Roberts' testimony. Mr. Hagee stated that the daily amount of water Duke Energy Wythe proposes to withdraw from the Austinville Mine is minimal when compared to the immense volume of water currently in the mine; it would likely have no adverse impact on the water levels in the mine. Likewise, there would be very little impact on the river if the water for the Facility were removed directly from the New River. Mr. Hagee testified that he spoke with representatives of Duke Energy Wythe who indicated the Company's intent to upgrade the service road to improve access to the Facility for construction equipment. He stated that, contrary to Mr. Roberts' assertions, there are currently no detailed maps of Wythe County. Mr. Hagee confirmed that the Company would build a filtering plant to remove contaminants from the Facility's effluent before it is returned to the Austinville Mine. Finally, Mr. Hagee believes Duke Energy Wythe will be a good neighbor to Wythe County. (Tr. at 37-39).

Mr. Alan R. Hawthorne is the executive director of the Joint Industrial Development Authority ("JIDA") of Wythe County, Wytheville, and Rural Retreat. He read into the record a resolution passed by the Board of Directors of the JIDA supporting construction of the Facility.[5] Mr. Hawthorne is a native of Wythe County who moved away to pursue job opportunities, but returned for the quality of life. He stated that the primary goal of his position is to "work for economic development" of the community, something that he believes the Facility will provide. Wythe County has experienced more than 10% unemployment over the last year. The Facility will create 400 temporary jobs and 25 long-term jobs, the majority of which will be filled by members of the Wythe County community. In addition, Mr. Hawthorne believes that the $300 million capital investment made by the Company in the Facility will create between $1 and $1.5 million in tax revenue and improve his organization's ability to recruit additional industry to the area. (Tr. at 40-45).

Mr. Hawthorne also addressed some of the environmental concerns raised in opposition to the Facility. He noted that a gas-fired combined-cycle plant is one of the most efficient and least polluting ways to generate electricity. He cited a letter written by the Sierra Club to the editor of

[5] *See*, Ex. 14, Appendix C.

the Wall Street Journal, published on February 13, 2001, expressing the Sierra Club's support for combined-cycle gas-fired generating facilities as a means of enabling the retirement of less efficient generating facilities. In this particular case, Mr. Hawthorne believes Duke Energy Wythe has been sensitive to the concerns of the local community. The Company initially wanted to take cooling water for the Facility directly from the New River. When objections were raised, it located another water source, the Austinville Mine, a more expensive alternative. Mr. Hawthorne believes the use of the Austinville Mine as a water source is an appropriate use of an impaired resource. (Tr. at 45-47).

Mr. Archie Campbell, a life-long resident of Wythe County and DENA stockholder, is not willing to sell his "birthright for a mess of pottage." He opposes taking millions of gallons of water out of the New River and turning it into water vapor that is released into the atmosphere without recycling. He noted that every community from Roanoke west is looking to the New River as their drinking water source. Mr. Campbell cited the Competitive Power Ventures' ("CPV") proposed Smyth County facility as the type of facility that should be built in Wythe County. The CPV facility uses approximately 40,000 gallons of water per day from the Holston River and returns approximately 75% of that amount back to the river. Mr. Campbell believes Duke Energy Wythe's proposal is the cheapest, most environmentally hostile, and most obsolete method of building a power plant today. He recommended that if the Commission were to approve the Facility it should require the Company to return 75% of the water taken from the New River back to the river. Mr. Campbell questioned how the Company could legally take water from a wild and scenic river for commercial purposes. Mr. Campbell also questioned the Facility's impact on the State Park. He noted that the Commonwealth of Virginia has spent millions of dollars upgrading the park, and he believes Duke Energy has picked the worst site possible in Wythe County to locate a power plant. (Tr. 48-55).

Mr. Wythe B. Sharitz is a resident of Wytheville and an at-large member of the Wythe County Board of Supervisors. He believes Wythe County is fortunate that Duke Energy Wythe is considering the site for an ultra-modern power generation facility. The site is located in an economically depressed community in Wythe County and the 400 short-term construction jobs and the 25 permanent jobs would benefit the area. County residents possess a work ethic that makes them an excellent fit to fill these jobs. He also believes using the Austinville Mine as a water source is an excellent use of a natural resource that might otherwise go unused. Finally, Mr. Sharitz believes the Facility will significantly increase the local tax base and relieve some of the pressure on the County's already overburdened real estate-taxed citizens. (Tr. at 56-57).

Mr. Danny McDaniel stated that he is currently Chairman of the Wythe County Board of Supervisors, but testified on his own behalf. Mr. McDaniel believes the local community would benefit from the creation of new jobs at the Facility. He also stated that the revenue generated by the Facility would be used to help local education. A few years ago, the Wythe County School Board requested $60 million to remodel the County's schools so that the County could provide the same educational opportunities that may be found in other parts of the state. The County was able initially to give $20 million toward the goal, but is in need of an alternate source of funding for the remainder. Mr. McDaniel believes the tax revenue generated from the Facility will allow the County to meet this important goal. (Tr. at 58-59).

Mr. Ronnie W. Walters is a resident of New Bern, Virginia, and is concerned with the Facility's water use and the potential dangers of its effluent discharges on water quality in the New River. He referenced an article published in the Southwest Times on May 17, 2002, detailing the risk of pollution caused by the Facility. He questions whether the creation of 25 new jobs at the Facility is worth the danger the Facility poses to the New River, its fishery and recreational uses, and the State Park. (Tr. at 61-62).

Mr. Frank H. McGrady, a resident of Draper, Virginia, clarified a statement previously made by another public witness that the Austinville Mine was a zinc mine. Since the earliest days of the mine (early 1700's), it was generally used to mine lead. When the New Jersey Zinc Company purchased the mine, it operated the facility as a zinc mine. (Tr. at 68-69).

Mr. Michael L. Mays is president of the Southwest Virginia Building Construction Trades Council and a property owner in Wytheville and Rural Retreat. He stressed the importance of using a respected contractor when building the Facility. He stated the members of his organization have had to travel to Washington, D.C. and New Jersey to find well-paying construction jobs because there were none in the local area. He hopes that Duke Energy Wythe will fill the 400 construction jobs with people from the local community in Southwest Virginia. (Tr. at 69-71).

Mr. Mike Webb, associate director of the JIDA, addressed earlier statements by Mr. Roberts that there was limited documentation from Duke Energy Wythe on file in the library. Mr. Webb stated there were three documents available to the public on file in the library: the Order of Notice for the Public Hearing; Exhibit W-2; and the Company's application to build the Facility. (Tr. at 82-83).

Mr. Andy Kegley is a resident of Wytheville and a farmer in Wythe County. He is also a member of the New River Land Alliance. Mr. Kegley opposes the Facility because he believes it will harm the State Park. For years, he and others in the community opposed American Electric Power's ("AEP") 765 kV transmission line crossing through their community by arguing in favor of local gas-fired merchant generation. AEP was opposed to the local generation option. Now, Mr. Kegley's worst fears are being realized. Not only will the community have AEP's 765 kV transmission line, but it may also have Duke Energy Wythe's power plant. (Tr. at 84-86).

Although Foster Falls and the State Park have been described by some as the crown jewel of the state park system, Mr. Kegley sees it as the "poster child of environmental dysfunction." With weak environmental oversight by the Commonwealth and in a County with no land use controls, he envisions the power plant as another assault on the County's most precious resources: its land, water, and air. Mr. Kegley is particularly concerned with the Facility's plans to use the Austinville Mine for cooling water. Once the cooling water is returned to the mine, will it leach into the New River and change the riparian temperature of the river, or contaminate the river with "heavy metal-laced mine water." Mr. Kegley sees the 24-inch gas line that will cross under the New River to serve the Facility as the final assault on the State Park. He wants Foster Falls to be a "crown jewel, not a slash-and-burn, smokestack-spewing, drain pipe-emptying poster child for all that is wrong with resource extraction and exploitation." (Tr. at 86-88).

Mr. W. Blankenship, P.E. (retired), a resident of Max Meadows, testified that while he has not seen the actual plans of the Facility, he has concerns whether Duke Energy Wythe will store any natural gas on-site, and whether that gas will be stored over water. Mr. Blankenship was particularly concerned with effects to the water, since there are substances in natural gas that are carcinogenic and also soluble in water. If other plants located down river from the Facility attempt to chlorinate any water that contained methane, the mix of methane and chlorine could produce toxic materials such as carbon tetrachloride, chloroform, methylene chloride, and methyl chloride. Mr. Blankenship also questioned whether the gas would be scrubbed with water before it is used in the Facility. (Tr. at 89-94).

Mr. Robert Myers is president of the Virginia State Building and Construction Trades Council ("Council") and maintains an office in Roanoke, Virginia. As president of the Council, Mr. Myers regularly follows the progress of proposed power plants. Mr. Myers expressed his hope that Duke Energy Wythe would use local workers to construct the plant. Currently, members of the Council are forced to seek work in New Jersey, West Virginia, Michigan, and Washington, D.C. due to a lack of work in the Wythe County area. Construction jobs at the Facility would also provide local workers much needed experience. (Tr. at 96-98).

Sister Clare McBrien lives in Wythe County and is an ecological educator for the Catholic Diocese of Richmond. In addition, Sister McBrien works with the Wythe Conservation Group. She believes God speaks to us through nature and we need to be careful not to unnecessarily harm it. She also believes that political authority has the right and duty to regulate for the sake of the common good. As part of the local community's future vision, the natural beauty of the area ranked high among residents of Wythe County and is the reason so many tourists visit the area. The local economy derives sizeable income from the tourist trade. The proposed project would directly impact the State Park and directly threaten the New River. Sister McBrien cannot reconcile how the state can spend $1.2 million in improvements to the State Park only to turn around and approve a power plant as its neighbor, which will diminish the appeal of the park. She noted that Wytheville's new industrial park, when completed, plans to withdraw approximately ten million gallons of water per day from the New River. If the Regional Water Authority of the New River Valley forms, it plans to draw another ten million gallons of water per day from the river. Given these cumulative impacts, Sister McBrien wonders who will come to visit a dried-up river. (Tr. at 99-100).

Sister McBrien believes the Duke Energy project is driven solely by deregulation and the hope for market gains enhanced by Virginia's lax regulatory policies and short-sighted local officials. She identified all the power plants slated for the region and stated that the state and the nation need an energy policy that recognizes we live on a fragile planet, global warming is a reality, and we need to promote renewable energy. Sister McBrien chided the Board of Supervisors and the JIDA for so eagerly approving the Facility, and then later deciding to tour a similar facility. She likened this to buying a car and then going back to look at it after you bought it. She wondered why the citizens of Wythe County should be subjected to the Facility's pollution when they did not ask for or need an electric generating plant. Sister McBrien stated the jobs and the tax revenue resulting from the Facility are far outweighed by increased pollution and the impact it will have on the County's natural attractions and the tourist trade. (Tr. at 100-02).

Ms. Anne B. Crockett-Stark is a member of the Wythe County Board of Supervisors, but testified as a private citizen and educator. She believes the 400 construction jobs created by the Facility would be beneficial to the area, and the 25 permanent jobs would boost the economy and encourage other industries in the region to increase salaries. Although she is not an engineer or environmental expert, Ms. Crockett-Stark believes the Environmental Protection Agency ("EPA") will not approve the project without thorough research and analysis. She believes we cannot be shortsighted about the environment, but at the same time we cannot be shortsighted about people, jobs, and reliable energy supplies in the future. As an educator, Ms. Crockett-Stark believes the Facility's additional tax base will benefit the local school system and the children in that system. (Tr. at 103-04).

Mr. Bill Gardner lives in Mooresville, North Carolina, and owns a vacation home in Pulaski County down river from Foster Falls. Regarding the environmental impact of the Facility, Mr. Gardner is worried that withdrawing large amounts of water from the New River would be dangerous considering that, due to drought, the river is at its lowest levels in six or seven years. Mr. Gardner also voiced concerns about contaminants in the water and does not want "to catch a bass with three eyes." He also asked where Duke Energy Wythe would get its water in the event the Austinville Mine does not provide the necessary quantity of water. He questioned whether the Company could request to take additional water from the river at a later date. Mr. Gardner inquired whether the Company could use dry-cooling instead of its proposed wet-cooling system. (Tr. at 106-111).

Mr. William Tucker is a resident of Charlotte, North Carolina, and owns property in Austinville, Virginia. He testified the Austinville Mine is directly beneath his property. He stated the mine should correctly be referred to as an abandoned lead and zinc mine. Mr. Tucker is in the process of restoring the 150-year-old house on his Austinville property and has planted a vineyard with 3,000 grapevines. After having been contacted by Company officials, Mr. Tucker is concerned with the route the water pipeline may take and the effect it may have on his property. Mr. Tucker would like to see a study done on the scouring effect of the water as it is cycled through the mine, and the impact the equipment that was left in the mine may have on water quality. In his opinion, no one should risk using the water in the mine, but instead should use the New River as a water source. In 2001, the mean water flow of the New River at Ivanhoe, which is upstream of the Facility, was 1,348 cubic feet per second, or approximately 891 million gallons per day. Mr. Tucker believes removing six million gallons per day would have an insignificant impact on the river. (Tr. at 113-15).

Mr. Tucker noted the Austinville Mine is recharged through groundwater from the New River and the local aquifer. It is not a static source of water. He noted that the Facility's water needs would ultimately be satisfied by water withdrawals from the aquifer. Mr. Tucker asked whether Duke Energy Wythe would monitor the water levels in the mine once operations commence. He questioned whether the wells in the area surrounding the Austinville Mine would go dry or whether the Company's operations might result in contamination of the wells. Mr. Tucker also questioned the Facility's impact on Austinville Limestone's operations at the mine site. He believes the Company has been a little loose with the facts and does not have a cohesive plan to address the citizens' concerns over the Facility. (Tr. at 117-19).

Mr. Homer D. Winter, Jr. is a resident of Wytheville. He has a B.S. in Mining Engineering from Pennsylvania State University. Mr. Winter worked as an engineer for the New Jersey Zinc Company at the Austinville Mine for several years during the 1950s. He stated that fluorescein dye testing performed on the New River during his employment illustrated that substantial water flow into the mine came from the New River. At the time, the majority of the water being pumped out of the mine came from the New River. He has no reason to believe that the flow from the New River into the mine has changed substantially since the test was performed. Water pumped from the mine will be replaced with water from the New River. Mr. Winter believes the mine has an insufficient recharge capability to meet the Facility's demands, and when the mine runs dry, Duke Energy Wythe will be looking directly to the New River as a water source. (Tr. at 120-122). On cross-examination, Mr. Winter testified that during the 1950s, water in the mine was continually being pumped out so that the mine could operate; however, the amount of water pumped out "wasn't anywhere near 12,000 gallons per minute." He also stated that the water drawn from the mine was pumped into the New River. (Tr. at 122-123).

Mr. David Carroll, a resident of Austinville, testified that Duke Energy Wythe should not be allowed to draw water from the mine because he believes it would threaten water quality and the declining water table. He believes "[p]umping out millions of gallons of water a day and then [pumping] back millions of gallons of heated wastewater will create a big bowl of metal soup" and further pollute area groundwater and the New River. Mr. Carroll reviewed the Company's environmental assessment, consisting of hundreds of pages, yet he could find only six paragraphs related to water issues. He questioned the accuracy of the Company's analysis, particularly since it was not conducted independently and the information provided contained obvious errors, such as the location of the mine site in relation to the proposed Facility. Mr. Carroll believes the Company should use the same dry-condenser technology for its plant as that proposed for the electric generating plant in Smyth County. He believes the cost for installing such technology is inconsequential for a $50 billion company. Mr. Carroll believes dry-cooling would require only a fraction of the water that Duke Energy Wythe proposes to use. Duke Energy Wythe initially proposed a 1300 MW facility, which would use 14 million gallons of water daily. Mr. Carroll is therefore concerned the Company's current plan to build only a 620 MW facility is merely an attempt to placate people in the area and that Duke Energy Wythe will double the Facility's size and water requirements once the plant is approved. Mr. Carroll cannot reconcile how Wythe County's plans to establish a County water plant on the New River could coexist with the Company's plan to dump lead- and zinc-tainted wastewater nearby. (Tr. at 124-28).

Mr. Elden Horton, a resident of Carroll County and chairman of the Carroll County-Blue Ridge Coalition, is opposed to construction of the Facility for several reasons. First, he noted that the Austinville Mine is a Superfund site, and referred to case number VAD 9801037633. Second, Mr. Horton opposes drawing water from the mine when the ground flow direction of water is unknown. He recommends the use of dry-cooling technology as a means of significantly decreasing water use at the Facility. He is especially concerned because he believes there is no way to measure how much water is actually coming from the New River. To reduce the risk that the New River and the air will be polluted by water from the mine, Mr. Horton believes that further study is necessary before a permit is issued in this case. Finally, Mr. Horton worries about the effect that drawing water from the Austinville Mine will have on local wells, springs, and streams. (Tr. at 128-130).

Ms. Lynn Caldwell testified on behalf of NCNR, a non-profit organization dedicated to protecting, restoring, and monitoring the New River and its tributaries in North Carolina, Virginia, and West Virginia. NCNR focuses its efforts on the upper New River from its headwaters in North Carolina to Claytor Lake in Virginia. NCNR believes the Facility is a direct threat to the environment and contrary to the public interest. NCNR has two primary concerns. First, it is concerned that Duke Energy Wythe's use of the mine water will increase the concentrations of pollutants in the groundwater and the New River and the impact of such concentrations has not been adequately tested. Second, it believes the Facility should use state-of-the-art cooling technology that will minimize the use of water, specifically, dry-cooling technology. This is especially important in the event that Duke Energy Wythe looks to the New River as its source of cooling water. NCNR asks that the CPCN be denied or, in the alternative, that the Commission act on the application only after the environmental impacts of the Facility are known. (Tr. at 131-133, 137).

Ms. Caldwell cited the 2001 Austinville Mine Water Quality Assessment which states that the lead, cadmium, and zinc found in the mine water will be concentrated five times, as the water is recycled in the Facility's cooling tower. Although Duke Energy plans to treat the effluent before it is returned to the mine, what technology will the Company employ and how will it dispose of the metals once they are removed from the effluent? NCNR wants to know the effect of these increased concentrations of metals on the groundwater supply and the New River. She questioned whether there are wells in the area that already have increased concentrations of these metals. The Wythe County Health Department has no knowledge of whether any of the wells in the area have been tested for the presence of these metals, and the State of Virginia requires only bacteriological testing of a well. (Tr. at 133-34, 136).

Ms. Caldwell explained that there is a mine overflow that goes directly into the New River. Duke Energy Wythe has stated that the mine would overflow only during periods of prolonged rain that causes the groundwater table to rise. Since 1996, the Austinville Limestone Company reported that this occurred once in 1998. However, employees with the Wythe County Health Department have advised NCNR that the mine overflows every time it rains hard; moreover, there have been some overflows when there were no recent rains. Ms. Caldwell noted there are hydrological connections between the New River and the groundwater aquifer. The studies relied on by Duke Energy Wythe for using the mine as a water source are over 20 years old and no one knows for certain the condition of the closed bulkhead doors in the mine. Consequently, no one knows what percentage of water taken from the mine would come directly or indirectly from the New River. Additionally, the impact of the Facility's water withdrawals on local groundwater levels is unknown. The Company's consultant, Duke Engineering and Services ("DES"), recommended that comprehensive surveys of peizometric data, sinkholes, depressions, and groundwater wells in the area of the Austinville Mine be done prior to pumping. NCNR recommends that these studies be done prior to the Commission approving the CPCN. (Tr. at 134-37).

Ms. Caldwell further questioned whether the Austinville Mine could meet the Facility's long-term water needs, or whether at some point in the future the Company would need to use the New River as a water source or open the bulkhead doors in the mine to increase water flow. If the bulkhead doors were opened, Ms. Caldwell questioned its impact on the New River and whether this would increase the likelihood that contaminated mine water could migrate to the New River. DES recommended robotic exploration of the mine to gather additional information and confirm the

position of the bulkhead doors. NCNR believes this should be done prior to approval of a CPCN. (Tr. at 137-38).

If Duke Energy must look directly to the New River as a water source, then what would be the cumulative impact of Duke Energy's withdrawals along with other foreseeable withdrawals on the beneficial uses of the river? Although Duke Energy is not currently planning to withdraw water from the New River, it is not precluded from filing such a request in the future if the Austinville Mine proves to be an unreliable source of water. For this reason, NCNR believes a cumulative impact study should be done in this case. Additionally, if Duke Energy must use the river as a source of water, there is also the threat to fish and other aquatic species from the Facility's water intake. NCNR believes dry-cooling technology should be used to minimize the Facility's water needs and reduce the Facility's impact on the New River. (Tr. at 138-40).

Finally, Ms. Caldwell raised the issue of the effect of the Facility's noise emissions on visitors using the State Park. She questioned whether Duke Energy Wythe had done a sound assessment study. (Tr. at 140).

Mr. David L. Lowe, a resident of Austinville, lives at the base of Hill No. 4 (Poplar Camp Mountain), an area designated by Duke Energy Wythe's environmental assessment as a test area for maximum CTSCREEN concentrations from the operation of the proposed plant. To date, he has personally received no notification from the Company that it would be doing any kind of testing. He feels as though residents of this area should have been personally contacted by the Company, alerting them of the possibility that contaminants could be in the air. (Tr. at 142-143).

Mr. Lowe is concerned about the amount of noise that will be funneled through the New River Trail State Park, due to the terrain. He feels Duke Energy Wythe's explanation that "noise levels attributable to plant operations will be less than EPA guidelines for outdoor sound exposure," does not adequately take into account the unique terrain of the park. Mr. Lowe questioned whether the Facility would actually create any new jobs for residents of the community since Duke/Fluor Daniel is constructing the Facility and Duke Energy Generation Services will operate the project. Mr. Lowe questioned the Company's Austinville Mine water analysis. He was particularly intrigued with the assumption that the mine fills at the rate of 10,900 gallons per minute. Given this assumption, he wondered whether there would be any room in the mine for the one million gallons of return effluent.

Also, in light of the fact that the Company's application listed only the Patriot Extension project as a potential source of fuel, Mr. Lowe questioned where Duke Energy Wythe would obtain fuel should the Patriot Extension project not be completed. (Tr. at 143-145).

Ms. Myra Martin Ferris, a resident of Hillsville, Virginia, is concerned that Duke Energy Wythe will clean its components with acid and then discharge this hazardous waste into the water. (Tr. at 146-147).

Mr. William Gilmer, a resident of Wytheville, has an engineering background, spending a number of years working for a major oil company in a power systems group. He believes the Company's proposal to use water either from the New River or the Austinville Mine for wet-

cooling is unacceptable, and the Commission should reject any application not based on dry-cooling technology. Duke Energy Wythe's wet-cooling option would disperse water vapor, carrying both particulate matter and soluble minerals, including lead, as an aerosol over a wide area. He also inquired as to the proposed height of the Facility's cooling towers. When told that the towers were going to be 160 feet, he responded that they are "pretty visible." Like previous public witnesses, Mr. Gilmer is also concerned about the noise pollution caused by the Facility. He hikes the Appalachian Trail and where it crosses under the 765 kV power line you hear a "hellacious noise" from the line. Although not often a high priority, Mr. Gilmer believes noise pollution from a project of this sort should be reviewed. (Tr. at 150-153).

Mr. Olen Gallimore is a resident of Austinville. He asked whether the groundwater would be more likely to flow from the Austinville Mine to the New River during times that Duke Energy Wythe is not drawing water from the mine. Because the area surrounding the Facility is karst, Mr. Gallimore is concerned that floods would cause polluted mine water to flow into the New River. He questions the Company's intent to get natural gas from the Patriot Pipeline, which has yet to be approved. He also questioned the number of jobs at the Facility that would be filled locally. Mr. Gallimore believes that the sight of the Facility will mar the State Park's appearance and that noise from the Facility will disturb the area. He wanted to know who would own and operate the water supply source for the Facility and who would be liable if in 15 to 20 years there was evidence linking the Facility's air emissions to birth deformities or an environmental catastrophe. Mr. Gallimore disagreed with the Company's statement in its environmental assessment that using water from the mine would have "no adverse environmental effect." He believes the Company has insufficient knowledge to make such a statement. He would rather face the risks of brownouts or increased electric costs than risk having his children or grandchildren exposed to the Facility's pollution. Finally, Mr. Gallimore asked the Commission to carefully investigate every aspect of the Company's application before giving approval to build the Facility. (Tr. at 154-163).

Ms. Marie Martin is a resident of eastern Wythe County near the site of the proposed AEP 765 kV power line and the Patriot Extension. She suggested that Duke Energy Wythe find another spot for its Facility and recommended several other locations with ample water supplies. She feels that with all of the power and gas lines already in the area, the Facility would be overly harmful to the environment. (Tr. at 164-165).

Ms. Liza Field, a resident of Wytheville and a member on the Virginia Open Space Preservation Board, had her comments read into the record by Ms. Bobby Wilson Jennings. Ms. Field believes the water in the mine is connected to the aquifer and the New River. She is concerned there will be no way to restore the level of the already low New River if the Company draws down the aquifer. She believes that no one at the state level has considered the effects of the Facility on the New River as a whole.[6] Demands on the New River for drinking water are increasing. Towns, cities and counties from North Carolina, Virginia, and West Virginia are

[6] It was particularly disturbing to hear Ms. Field's comments that representatives from the Department of Conservation and Recreation were precluded from voicing their opinion on the Facility, and that DEQ was precluded from taking into consideration all of the other expected uses of the New River and future water needs in reaching its recommendation on the Facility. As Ms. Field stated "any application to take such a volume of water out of the New River as a cheap coolant for a power plant should be considered in light of all the other demands on the river, present and future." *See*, Tr. at 168-69.

looking to the New River as a source of drinking water. She wonders who will decide what uses are most important. The cumulative impact of water withdrawals must be examined now. She disagrees with the Wythe County Board of Supervisors' and JIDA's decision to support the Facility, a decision she believes was based solely on the revenue the Facility will generate. She believes that ruining and depleting our natural resources for a few dollars will, instead of helping, destroy the region's economy. Outdoor recreation and tourism are a huge revenue source for Virginia, and the New River Trail accounts for $17 million. (Tr. at 167-173).

Ms. Jennings, a resident of Max Meadows, Virginia, also testified that she lives very near the New River and is extremely concerned about the effect of the Facility on the river and the environment. She believes that the New River is one of the cleanest rivers in the United States and should be maintained for the benefit of future generations. (Tr. at 173-174).

Mr. Andy Brillheart lives in Pulaski County, Virginia. For the past six years, he has worked as a fishing guide on the New River. He is on the river approximately 150 days per year and he can see the water change from year to year. The New River is one of the cleanest rivers in the nation and was declared a Heritage River by President Clinton. Mr. Brillheart is concerned that pollution caused by the Facility will impact not only Carroll and Wythe Counties, but the recreation industry in West Virginia, as well. He is concerned that the millions of dollars of public money spent on the State Park and the fisheries program on the New River will be wasted if the area is ruined by pollution. Different species of plants and animals will be threatened if heated water is released into the New River. (Tr. at 175-176).

Mr. Phillip Mark Ward, a resident of Max Meadows, testified he is a pipefitter supervision and maintenance manager at the Radford Arsenal, and is trained in the installation and repair of above and underground gas lines. Mr. Ward chose to live 40 miles from where he works, for the quality of life. He is concerned the Facility will be loud, consume a large amount of water, and discharge pollutants into the air. Mr. Ward doubts the Facility will create many jobs for people in the local area. He believes they lack the proper training and skills necessary to fill the construction jobs created by the Facility. Master craftsmen would come into the area, build the Facility, and leave once it is finished. Very little on-the-job training will be conducted during construction. In his opinion, only a handful of the permanent jobs would be filled from the local area and these would be the janitorial and basic laborer positions. The skilled operator positions would come from other facilities. Finally, Mr. Ward believes the Company should not use the area's natural resources without first becoming a part of the local community and supporting the local economy. (Tr. at 178-181).

Dr. James B. Stone is a local physician in Wytheville. Dr. Stone owns a house on the New River in Austinville. He testified when he built his house, he had the water coming from his Class B well checked for all kinds of contaminants. Testing showed no contaminants other than limestone. While he recognizes the importance of energy, he has three main concerns with the Facility. First, he asked whether the Facility would decrease surrounding property values. Second, he is concerned that drawing water from the aquifer will accelerate the flow of water and increase the incidents of sinkholes in the karst ground. Lastly, he is concerned the Company is employing untested methods of drawing water from the Austinville Mine because there is no precedent for the use of mine water containing heavy metals in such projects. (Tr. at 182-186).

Ms. Elizabeth Bell is a resident of Woolwine, Virginia. She believes that it is now time for government to start protecting our cultural and environmental resources. She further believes that no amount of money is worth the damage she thinks would be done to the New River if Duke Energy Wythe is allowed to draw seven million gallons of water out of either the river or the Austinville Mine. She is especially concerned about the increased water temperature caused by water discharges and the effect that it may have on the animal life in the New River. (Tr. at 186-188). Ms. Bell questions the need for this power plant. Currently, she believes there are 29 power plants in Virginia, and that permits are being sought to build an additional 30. At this rate, the air quality in rural Virginia will be the same as Northern Virginia, or Detroit. She is concerned about the Facility's impact on the groundwater aquifer, wells, and springs in the area, the pollution emitted into the air and water, and the additional power lines needed to serve the Facility being built in the area. Finally, Ms. Bell asks the Commission to carefully balance the dual interests of protecting the environment and allowing technology and industry to progress. (Tr. at 189-193).[7]

Ms. Elaine R. Holeton is another resident of Wytheville. She is disappointed with what she sees as the Commission's bias toward corporations. Specifically, Ms. Holeton does not agree with the Commission's decision to allow AEP's 765 kV power line to be built. She is concerned about the Facility contributing to the deterioration of the New River, which she believes, has been occurring during her lifetime. Finally, Ms. Holeton pointed out that exploring alternative sources of energy is a good idea for the environment. (Tr. at 194-195).

Ms. Carol Sommers is a resident of Woolwine, Virginia, and a member of the Blue Ridge Coalition. She questioned whether the area needed more energy, and whether construction of the Facility adequately responds to that need. Ms. Sommers testified that her home is currently powered by photovoltaic panels located on the roof of her house. She wonders if alternative sources of energy, similar to what she uses, could be employed by power companies to produce and conserve energy. (Tr. at 196-200).

Mr. Ian Fiorini, a resident of Max Meadows, asked about pending lawsuits against Duke Energy Wythe. He wonders if Duke Energy Wythe's past "track record" can be considered in this permitting process, and is concerned that the Company and its corporate parent might have a history of environmental violations. Mr. Fiorini testified he owns the Tree Hugger's Outdoor store in Wytheville that thrives on the eco-tourists visiting the area. He is very concerned the Facility will discourage visitors from coming to the State Park and thereby negatively impact his business. He clarified that the New River Trail alone accounted for the $17 million in annual revenue to the local economy, which does not include what those tourists spent in the local communities. Mr. Fiorini sees a huge demand for the outdoor sports, recreation products, and services his store offers. He believes the benefit of the new jobs created by the Facility will not offset the damage to the eco-tourism and tourism industry that is flourishing in the area. (Tr. at 202-206).

Mr. Laird Baldwin is another resident of Wytheville who settled in the area for its natural beauty, after having lived in various places around the world. He shares the views of many of the public witnesses that he would hate to see the Facility pollute the area. Mr. Baldwin questioned

[7] Portions of Ms. Bell's comments have not been summarized; to do so would diminish the passion and conviction with which she testified. These comments begin in the middle of page 190 of the Transcript and conclude at the bottom of page 193.

whether a rumor he heard - that Duke Energy Wythe initially proposed to use "dry stack cooling" - was true. Mr. Baldwin is concerned that the water from the Austinville Mine will feed into the New River by means of tributaries such as the "Buddle Creek" or "Buddle Branch" that runs from the mine into the New River. (Tr. at 207-213).[8]

Dr. Barbara Perona is an anesthesiologist who lives in Wytheville. She would like to know how many pounds of lead and other pollutants the Facility will release into the air. As a physician, Dr. Perona is especially concerned about the adverse health effects of pollutants. She believes the few local jobs created by the Facility are not worth the potential harm to health and the environment. As part of its evaluation, the Commission should consider that ordinary people are becoming more concerned with having a good quality of life. (Tr. at 214-18).

Mr. Alan Cox is a resident of Woodlawn, Virginia. He wondered what Duke Energy Wythe would do with the electricity it generated and how it was going to move the electricity. He questioned the accuracy of the information produced by the Company. (Tr. at 219-24).

Mr. George T. Cregger, an Austinville resident, testified the Wythe County Board of Supervisors holds permits to draw an unlimited amount of water from the New River. Apparently, the New Jersey Zinc Company had a permit to withdraw an unlimited amount of water from the New River to support its operations and supply the Town of Austinville, which was a company-owned town that supplied housing for the miners that worked the mine. When the mine closed, the New Jersey Zinc Company turned over the waterworks that supplied the town and the water withdrawal permit to Wythe County. He is concerned that if industries get this permit from the Board, they could draw substantial amounts of water from the New River for their own uses. (Tr. at 226-27).

B. June 25, 2002, Evidentiary Hearing.

Ten public witnesses testified at the hearing held on June 25, 2002. Two public witnesses supported the Facility, and eight opposed it.

Ms. Shirley Bralley Holland is a native of Wythe County currently residing in Henry County. After World War I, her father went to work in the Austinville Mine. In 1938, he and five other men ages 46 to 60 died of a mysterious blood disease, now known as leukemia. Ms. Holland believes his death was directly related to his work in the Austinville Mine. In her opinion, the mine should remain closed forever. Since lead settles in water, Ms. Holland is concerned about disruption of lead in the mine when pumping operations begin. In addition, she believes the proposed Facility poses a harm to the water supply in the region and the New River. In these times of drought, she advises the Commission to examine the need for water for human consumption in the area before approving a power plant that will consume million of gallons of water per day. Ms. Holland believes Duke Energy Wythe's proposal to use water out of the Austinville Mine is nothing

[8] Mr. Baldwin ended his comments by quoting an old beatnik poet friend of his who wrote a short piece entitled "Talking on the Water." "No apologies are due for trying to hold the line against either disruptive growth or intrusive industrial uses. In doing so, we help to sustain community values and the biological viability of our landscape. We are fouling our air and water and living in noise and filth that no animal would tolerate, while advertising and politicians try to tell us we've never had it so good."

more than a well-planned ploy to get water directly from the New River when the plan fails after the plant is already built. (Tr. at 248-53).

Mr. Blankenship, a retired chemical engineer and a former environmental engineer with the EPA, also expressed concern about using water out of the mine. Mr. Blankenship testified that he knew of no power plant in the United States or in foreign countries that used underground water to produce steam. Mr. Blankenship, who also testified at the May 29 hearing, testified that there would be a huge expense associated with removing dissolved solids found in the underground water supply that Duke Energy Wythe proposes to use for cooling. He is concerned that this will ultimately encourage Duke Energy Wythe to begin to use water from the New River to lower its costs. Mr. Blankenship is also very concerned about the effect of methane gas on ozone. (Tr. at 253-56). He cited the removal of the schoolhouse in Austinville as a consequence of underground cracking. He is concerned that the surrounding area, already prone to such cracking, will be more susceptible to damage due to the removal of large amounts of groundwater. (Tr. at 253-58). During cross-examination by Staff, Mr. Blankenship expressed doubt in the cost efficiency of removing the dissolved solids from the groundwater before using it as cooling water. (Tr. at 258-60).

Mr. Robert C. Dalton, county administrator of Wythe County, testified that the Wythe County Board of Supervisors passed a resolution in support of the Duke Energy Wythe Facility. (Ex. 1). Mr. Dalton believes that the Facility should be approved for four reasons: 1) it will help to alleviate the high unemployment rate in Wythe County; 2) it will increase the Wythe County tax base by as much as 23% and contribute approximately $1.5 million per year in revenue to the County; 3) the site has an adequate water source and sufficient electric transmission infrastructure; and 4) it provides a clean alternative to coal-fired power plants. Mr. Dalton also discussed a recent agreement with Carroll County and the Town of Wytheville to construct a new water treatment plant at Austinville to serve as a public water source for the three localities. The preliminary engineering work for the project has been completed. (Tr. at 261-66).

Mr. Dalton further testified the Wythe County Board of Supervisors is adamantly opposed to the Commission requiring a conservation easement on the land surrounding the Facility that is not being used for development. The Board of Supervisors believes any site restrictions should be a local matter and not mandated from Richmond by way of the Commission. The County has a zoning ordinance in place. (Tr. at 267-68). On cross-examination, Mr. Dalton testified that Wythe County did not issue any special use permits or any other permit for the construction of the Facility. He further testified the expansion of the public water system in the Wythe County area is expected to be completed within the next two years and that Wythe County would be operating the water plant and would sell water to the Town of Wytheville and Carroll County. (Tr. at 269-70).

Mr. Gallimore, who also testified at the May 29 hearing, asked for clarification of a map contained in Duke Energy Wythe's application detailing the site of the proposed Facility. Specifically, he inquired about the significance of an unmarked circle on the map that indicates a three-mile radius around the Facility. He is also worried about pollution from the Facility being carried by "prevailing winds" into Carroll County where he resides. He questioned the impact of the Facility on attendance at the State Park, last year, approximately 1,046,000 people visited the park. Mr. Gallimore suggested that dry-condensing would be an effective method of limiting the Facility's pollution, and that the Facility should be located north of I-81. Mr. Gallimore mentioned

an alternative site between Wytheville and Rural Retreat. In support, he stated that area has several water sources, natural gas lines in place in Wytheville and Rural Retreat, and several electric transmission lines to interconnect the Facility, a 500 kV line, two 148 kV lines, and one proposed 765 kV line. (Tr. at 270-75).

Mr. David Carroll, a resident of Austinville, is concerned the Facility will have a significant adverse impact on Foster Falls State Park and Shot Tower State Park. He feels it would be a crime for the Facility to locate at the back door of Virginia's finest state parks. He feels as though Duke Energy Wythe's proposed Facility would waste all of the money the Commonwealth has spent over the last 15 years to develop these parks. Those development efforts have paid off. Tourists and other users of the parks are a much-needed asset to the community. Mr. Carroll believes greed swayed the Board of Supervisors to approve the project, and the tax revenue and jobs created by the Facility would not be worth the pollution that will be pumped into the environment over the next 20 years. He believes the Facility and the Patriot Extension are interrelated. One is dependent upon the other, and the gas pipeline has yet to gain approval. Mr. Carroll believes the Facility will have an impact on regional haze. He cited a newspaper article stating that Wythe County has the highest levels of ozone concentrations in Virginia. Given these high concentrations, Mr. Carroll is concerned that the Facility will add to the already polluted air. Mr. Carroll is in favor of the Commission taking a go-slow approach to reviewing applications for merchant generating plants. He commented that if privately-owned electric generating plants want to compete in a free market, then they should not be allowed to operate under current eminent domain laws. The Commonwealth's eminent domain law is being used for the benefit of a privately-owned company. (Tr. at 276-80; Ex. 3).

Mr. Thomas J. Smith, president of the NCNR, testified on behalf of the organization. Mr. Smith is concerned that old studies showing the waterflow rate into the Austinville Mine might not accurately represent the current inflow rate, and that the effect of water withdrawals on local hydrology is not known. He stated that it is unclear how much of the polluted water will find its way into the New River, local wells, and groundwater. He also believes that dry-cooled technology should be explored, particularly the additional cost for such technology and the benefits to the environment. Mr. Smith asked whether there had been any studies to explore the cumulative effect of the Duke Energy Wythe Facility combined with the two proposed municipal water plants located in the headwaters of the New River. (Tr. at 281-84).

On cross-examination, Mr. Smith testified that he is aware that Duke Energy Wythe proposes to draw water for the Facility from the Austinville Mine and not the New River. (Tr. at 285-87). He further testified that, while he knows the New River is in a drought condition, he does not know the current flow rate. Mr. Smith suggested dry-cooling technology as an alternative to withdrawing water from either the New River or the Austinville Mine. (Tr. at 287-88).

Ms. Charlotte Darby is a resident of Roanoke, Virginia, and is very concerned the Facility will pollute a "beautiful part of the state." She has seen the tourist brochures promoting the New River as a tourist destination, and she is worried that the Facility will impact visitation at the State Park and tourist revenue in the surrounding community. If the Facility were constructed, Ms. Darby would no longer feel comfortable taking a Boy Scout troop to the State Park. She would like to see updated and accurate studies detailing the effects of the Duke Energy Wythe Facility on the New

River. She wants to ensure the Commonwealth does its duty to protect the health and welfare of its citizens. (Tr. at 289-94).

Mr. Jeffrey Scott is the executive director for the NCNR. Mr. Scott cited the engineering report conducted by Duke Engineering & Services ("DE&S") showing a hydrological connection between the Austinville Mine and the New River. Based on what he characterized as conflicting information in that report, he is very concerned about the impact of drawing water from the mine. In one portion of the report, it states that a bulkhead door at Chiswell's Hole was closed to block water from the New River from flowing into the mine, while several pages later it states the bulkhead doors leaked like Niagara Falls. He questioned whether certain studies had been done to accurately measure things such as water inflow or ground stability. Moreover, Mr. Scott believes that the dye studies and robotic exploration recommended in the DE&S report should be conducted to verify flow patterns if the mine is used as a receiving point for cooling water. Mr. Scott further states that such studies should be conducted before approval is granted. Mr. Scott believes that the Commission should mandate that a comprehensive survey of baseline hydrogeology and depression features be done before permission is granted to proceed with the project. Mr. Scott is very concerned about the levels of lead, zinc, and cadmium in the mine exceeding national and state drinking water standards and the danger of stirring up these contaminants by drawing water from the mine. At present, the water in the mine exceeds Virginia Groundwater Standards, Freshwater Acute Standards, and Fresh Water Chronic Standards for lead, zinc, and cadmium. If the water from the cooling tower is not treated prior to reinjection into the mine, the levels of lead, zinc, and cadmium will exceed the Federal Drinking Water Standards and the Virginia Human Health Public Water System Standards, as well as the other standards cited above. Mr. Scott is concerned that re-injecting the cooling tower blowdown back into the mine could potentially contaminate the underground drinking water source for approximately 1,000 local citizens. Mr. Scott cited the health hazards associated with excessive exposure to lead or cadmium. (Tr. at 296-300).

Mr. Scott believes the data submitted by Duke Energy Wythe to the public, the Commission, EPA, DEQ, and DCR is misleading and does not accurately represent Duke Energy Wythe's plans. For instance, Duke Energy Wythe tested the groundwater in the Van Mater Shaft -- 1.9 miles away from the location from which water will be drawn.[9] Mr. Scott believes that to accurately assess pollutant discharge, measurements should have been taken at the Brown Ore Body Shaft and the Fisher Fields Shaft, which are closer to the point of withdrawal. He questioned whether the Duke Energy Wythe Facility violates the Federal Safe Drinking Water Act. (40 C.F.R. § 144.1). Mr. Scott stated that, according to EPA's own documents, there is a potential to contaminate the underground drinking water source, and toxic levels of metals in the concentrated discharge exceed National Primary Drinking Water Standards adopted in 40 C.F.R. Part 142. Mr. Scott provided his analysis of the Safe Drinking Water Act and his conclusion that Duke Energy Wythe is putting contaminants back into the underground aquifer, which is a drinking water source for approximately 1,000 homes within a three-mile radius of the site. Mr. Scott stated, to best of his knowledge, the EPA has not designated the aquifer an exempted aquifer. Additionally, he stated the Safe Drinking Water Act prohibits the injection of water containing any lead or excessive levels of cadmium into an underground aquifer. Mr. Scott is concerned that without factual and scientifically validated water quality data the EPA or any permitting agency cannot assess accurately the true impact of the

[9] Initially, the Company planned to withdraw water from the Brown Ore Body Shaft and the Fisher Field Shaft, which are 1.9 miles northeast of the Van Mater Shaft. The Company now intends to draw water from the Van Mater Shaft.

Facility's proposed injection of lead and cadmium-tainted water on groundwater. Mr. Scott recommended that Duke Energy Wythe be required to implement a water monitoring system that includes, but is not limited to, establishing a baseline of both water quality and quantity, and monitoring those parameters for the discharge zones. He also recommended monitoring all the private wells within the area of influence, New River downstream of the mine, and upstream of Foster Falls, and at bore holes surrounding the area of influence. He further recommended that such testing be conducted monthly. (Tr. at 300-08).

Mr. Scott raised concerns about lead, cadmium, and mercury emissions from the cooling towers in the exhaust plume. He stated the technology exists to reduce these emissions to zero, but Duke Energy Wythe has not proposed to remove these metals prior to using mine water in the cooling tower. (Tr. at 308-09).

Mr. Scott also addressed light pollution and its impact on the State Park. He stated most of the visitors come to camp at the park and view the night sky. He would like the Facility's impact on the night viewshed examined. (Tr. at 309-10).

Mr. Scott also questioned the accuracy of the estimates of the Facility's economic impact on the surrounding area. He stated that because the testimony of Mr. Mark Carsley, principle research analyst for the Commission's Division of Economics and Finance, contained redacted estimates of revenue generated by the Facility, it was impossible for citizens to effectively critique the study. He questioned why a complete economic benefit study was not conducted. Duke Energy Wythe's analysis took into account only the positive benefits of the Facility without looking at the economic costs. Mr. Scott outlined a number of economic costs associated with the Facility, including those associated with water use, and impact on the State Park. He is very concerned about the potential loss of revenue generated by tourists visiting the State Park. Mr. Scott cited several examples of the positive economic impact of the "rails to trails programs" on tourism, and the specific economic impact of the New River Trail State Park on the local economy. He advocated the promotion of sustainable tourism for the area and cited its minimal impact on local government services compared to the revenue it generates. He noted that tourism in Southwest Virginia grew by 17%, more than anywhere else in the Commonwealth. He stated spending by tourists in the southwest Blue Ridge Highlands of Virginia has risen over 53% in the last eight years, which is 25% higher than the rest of Virginia. The fastest growing industry in the region is tourism. For these reasons, Mr. Scott believes the State Park needs to be protected, and placing a power plant next to the park makes absolutely no sense. (Tr. 308-16).

Mr. Scott asked why Duke Energy Wythe was not considering the use of dry-cooling technology; he believes the Commission should examine this technology more closely. Mr. Scott compared the Facility to the proposed CPV facility and wondered why, if dry-cooling was acceptable for the CPV facility in Smyth County immediately to the west of Wythe County, Duke Energy Wythe was not going to use this technology. He noted that Duke Energy Wythe's viewshed analysis did not include the vapor plume that will be emitted from the Facility. In terms of the size of the Facility, Mr. Scott sees a positive trade off between elimination of the vapor plume and reduced water usage, against the need for a slightly larger footprint for the Facility. He responded to Duke Energy Wythe's argument that a dry-cooled facility would increase noise emissions. The noise emissions from such a facility would be 60 to 65 decibels, or the average car engine, at 400

feet from the perimeter. Mr. Scott argued this would be similar to the Company's current proposal. He also responded to Duke Energy Wythe's argument that implementing dry-cooling technology would impose an energy penalty in the production of electricity. Specifically, he noted that Duke Energy Wythe's reliance on the energy penalty for a coal-fired steam plant was misplaced and the difference between a gas-fired wet-and dry-cooled plant amounted to only 0.4 %. Mr. Scott argued the increased costs associated with a dry-cooled plant, approximately $11.5 million, were worth it. (Tr. at 317-19).

Mr. Scott addressed conservation easements. NCNR has worked with a number of conservation easements. Although they may be a local matter to some degree, it is up to the landowner whether to grant a conservation easement in the land. The tax consequences of the easement for the grantor are governed by federal law. If Duke Energy Wythe donated the easement, it would receive a tax write-off for the contribution. Even if the remaining acreage is placed under a conservation easement, Wythe County could continue to collect taxes on the Facility and the surrounding land, the unused acreage would be assessed at an agricultural rate, and the Facility would be taxed at an industrial rate. If the Commission mandated the use of dry-cooling, Mr. Scott believes this would increase the County's tax revenue and the County should be supportive of such an effort. NCNR does not want the land surrounding the Facility turned into an industrial park. (Tr. at 322-25).

On June 26, 2002, Mr. Scott was recalled as a public witness to allow Duke Energy Wythe and Staff another opportunity to examine him. On cross-examination, Mr. Scott testified that, although he discusses in his testimony Virginia drinking water standards and EPA regulations on underground sources of drinking water, he is not an expert in either area. In particular, Mr. Scott stated he did not know the difference between the "acute" and "chronic" standards and the implications to human health of consuming water meeting either standard. Mr. Scott indicated that he believes the EPA is supposed to test groundwater as part of the Safe Drinking Water Act Underground Injection Control ("UIC") permit process, and they have not done so in this case. Mr. Scott testified he based his testimony on the number of homes using groundwater wells within a three-mile radius of the Austinville Mine, on a 1987 EPA report that conducted an environmental assessment of the Austinville Mine on-site dump. He stated that, although the mine water is not a drinking water source, groundwater connected to the mine is a source of drinking water. (Tr. at 587-91).

Mr. Scott further testified the director of the New River Trail State Park provided him with the Park's impact on the local economy: 1,044,000 visitors and $17.5 million generated. The Virginia Tourism Department came up with the multiplier effect for tourism dollars and money spent in the surrounding areas. (Tr. at 591-92).

Mr. Steven D. Irvin, chairman of the JIDA, testified on behalf of his organization. Mr. Irvin wanted the Commission to have a good appreciation of the economic impact of the proposed Facility. He noted that the Facility would be the largest capital investment ever made in Wythe County. He testified Wythe County has experienced financial difficulty in the past, with high unemployment rates, low employment rates, and low wage rates. In fact, unemployment in Wythe County is twice the state average. In Wythe County, the teachers are paid at the bottom of the salary range for the state, yet are still responsible for students' Standards of Learning ("SOL") test

results. During his visit to the Duke facility under construction in Marietta, Ohio, Mr. Irvin was told 70-80% of the construction jobs were filled from the local area. He also detailed the construction materials that will be purchased from local vendors and suppliers. He believes the Facility will have a very positive economic impact on the community -- providing well-paying new jobs, increasing the County's tax base by 23% or $285 million, and providing much needed money for public schools. Mr. Irvin pointed out that numerous environmental groups endorse gas-powered plants such as the one proposed by Duke Energy Wythe. (Tr. at 328-36).

On cross-examination, Mr. Irvin testified about the proposed industrial park northwest of Duke Energy Wythe's proposed Facility. He stated that though there were other areas in Wythe County that have power lines, he believed the site chosen for the proposed Facility was the best place for Duke Energy Wythe to locate its Facility. He was not aware whether the Company had studied any other sites in the County. (Tr. at 337-38).

Mr. David Bernard, a resident of Blacksburg, read into the record an editorial article he wrote for the Roanoke Times. Mr. Bernard is a recreational and whitewater canoeist. He related his adventures canoeing on the New River at Foster Falls and the sheer beauty of the area. He expressed his great concern that the Facility would pollute the environment. Duke Energy Wythe will pay nothing for the water it will use, nor will it pay for the privilege of polluting the air. As an avid outdoorsman, he has an interest in the condition of the New River. For him, the destruction of the New River environment for short-term economic gains makes little sense. (Tr. at 339-43). On cross-examination, Mr. Bernard admitted his article was submitted over a year ago when Mr. Bernard understood the Facility would withdraw cooling water from the New River. He described the Company's plans to use the Austinville Mine as a source of cooling water as ridiculous and even worse than reducing the flow of the river and increasing the temperature of the water. (Tr. at 343-44).

Testimony and Evidence of Duke Energy Wythe

Duke Energy Wythe presented three witnesses, Paul N. Lesner, manager for Project Development for DENA; Arthur D. Dailey, engineering supervisor II for Framatome ANP DE&S and a contractor to Duke Energy Wythe; and William G. Collins, manager of Environmental Licensing for DENA.

A. Mr. Lesner.

Mr. Lesner filed direct and rebuttal testimony, and also testified on both June 25 and 26. Mr. Lesner described the Facility as a 620 MW natural gas-fired, combined-cycle power plant located near Foster Falls in Wythe County. The Facility will be located on a 715-acre tract east of Highway 608, immediately adjacent to the AEP Jackson's Ferry substation. Duke Energy Wythe intends to use approximately 35 acres of land for the plant. Mr. Lesner testified the Company evaluated possible sites for the Facility by considering the available infrastructure. The site chosen had the best access to AEP's transmission system through the existing substation. It would be more difficult to interconnect the Facility if it were built in a location without an existing substation and/or with lower voltage transmission lines in the area. (Tr. at 691-93).

The Facility will use two GE 7FA combustion turbines with dry low-NO_x burners (nominal 160 MW each), two ABB heat recovery steam generators, two gas-fired duct burners (equivalent to 60 MW each), and one GE steam turbine (nominal 300 MW). The sole fuel for the Facility will be natural gas. The Facility will be capable of operating as a base load generator year round, and all of the Facility's output will be sold at wholesale to Duke Energy Wythe affiliates. (Ex. 7, at 1-4). Mr. Lesner noted the GE 7FA turbines to be used by the Facility will operate more efficiently and more cleanly than almost any other electric generating plant currently in operation. (Tr. at 422-25).

The Facility will be interconnected to AEP's electrical system through a single 765 kV transmission line approximately 3000 feet long, running from the Facility to the AEP Jackson's Ferry substation. The transmission system impact study and facilities study prepared by AEP indicate AEP's transmission system can safely accommodate the addition of the Facility. Natural gas for the Facility will be provided through the proposed Patriot Extension being constructed by ETNG, an affiliate of DENA. An interconnection will be constructed to supply natural gas to the Facility, and Duke Energy Wythe will construct, own, and operate plant piping between the meter station and the Facility.[10] (Ex. 7, at 3).

The Company expects the cost of the Facility to be in excess of $250 million, and it will be financed by funds internally generated by affiliates of Duke Energy Wythe. DENA will manage the development and permitting activities with a team of project developers and qualified support staff; and Duke Energy Generation Services, a DENA affiliate, will operate the project. (Ex. 7, at 4-5).

1. Use and Treatment of Mine Water.

Duke Energy Wythe will withdraw water for the Facility's cooling and other operations from the Austinville Mine, treat the water, and then return the used water to the mine. Although the Company considered withdrawing water from the New River, it determined that withdrawing water from the mine is a better use of resources, since the mine water is not suitable for any other use. (Ex. 8, at 7-10). The Department of Conservation and Recreation indicated in a letter to Duke Energy Wythe that "it is vastly preferable to continue to use and isolate the already impaired Austinville Mine waters rather than discharge contaminated waters to the New River." (Ex. 8, Attachment PL-R-9).

Mr. Lesner testified the Environmental Protection Agency ("EPA") issued a rule authorization on March 11, 2002, approving the discharge of water from the Facility into the Austinville Mine pursuant to the Safe Drinking Water Act Underground Injection Control ("UIC") program. (Ex. 8, PL-R-5). The EPA determined that the Company's discharge of water back into the mine posed a minimal potential to adversely impact groundwater. This is the case even though at the time of its initial UIC application, Duke Energy Wythe was not yet proposing to treat the discharge water. Mr. Lesner testified that the Company had numerous, extensive discussions with DEQ representatives about withdrawing and discharging water from/into the mine, and questioned whether any state permits were required. DEQ indicated that no state permit is required to

[10] Mr. Lesner testified that during land clearing, excavation, and construction activities for the Facility, Duke Energy Wythe will control fugitive dust through the use of paved roads where appropriate and the application of water coming from a groundwater well located on-site. Because the site is pastureland, Duke Energy Wythe will not need to dispose of any trees cleared on the property and thus does not intend to do any open burning at the site. (Ex. 8, at 5).

withdraw or reinject the mine water, and authority to reinject water into the mine rests solely with the EPA; therefore, an additional DEQ-issued permit is not required for the proposed discharge of water into the mine. (Ex. 8, at 6-7; Tr. at 450-54, 655-56).

As a condition of the UIC approval, Duke Energy Wythe will monitor both water withdrawn from the Austinville Mine and water discharged into the mine. The Company will monitor on a quarterly basis the concentrations of lead, zinc, and cadmium as well as pH, temperature, conductivity, and total dissolved solids, in accordance with the EPA rule authorization. DEQ has requested, and Duke Energy Wythe has agreed, to provide an annual report summarizing the monitoring results of the raw water and returned water. (Ex. 8, Attachment PL-R-6).

Mr. Lesner detailed the water treatment process for the discharge water before it is returned to the Austinville Mine. Water from the cooling tower first will be discharged to a clarifier tank. To enhance metal precipitation, the water treatment clarifier will utilize both lime and flocculents, the standard water treatment practice. The Company currently plans to operate the clarifier close to the zinc and lead minimum solubility range (a pH of 10) in order to obtain a high degree of metals removal. By increasing the pH of the water, the zinc is precipitated out. Prior to discharge to the mine, the water will be further treated with acid to bring the pH to levels roughly equivalent to that of the raw water. Additionally, sodium bisulfite will be added to the discharge water to reduce residual chlorine levels in accordance with standard wastewater treatment system practice. Residual chlorine levels are expected to be reduced to an average 0.2 ppm in accordance with federal guidelines for protection of aquatic life. The mine water chlorine levels will be sampled periodically to ensure the effectiveness of chlorine removal. (Ex. 8, at 8-9).

Two independent laboratories have confirmed the effectiveness of Duke Energy Wythe's proposed treatment process for discharge water. (Ex. 8, at 9). As a result of the treatment process, the quality of the discharge water will be of the same, or better, quality than the raw water withdrawn from the Austinville Mine and the concentrations of metals in the discharge water will be at current levels or lower. In fact, the Facility's treated return water will have little effect on the overall quality of the mine water and is likely actually to improve it over time. (Ex. 8, at 7, Attachment PL-R-9; Tr. at 445-46, 687-89).[11]

Neither EPA nor DEQ required treatment of the discharge water prior to reinjection; Duke Energy Wythe made the decision to preserve the mine water quality. Mr. Lesner indicated that "no one . . . has a more powerful interest in the quality of the mine water than Duke Energy" because a degradation of the mine water quality could adversely impact the Facility's operations and financial performance. (Tr. at 452).

Mr. Lesner testified that some of the Austinville Mine water will be treated prior to use by the Facility; for example, water to be used in the boiler operation or the steam process needs to be extremely pure and is thus treated not only for lead, zinc, and cadmium but for suspended solids as

[11] In the UIC authorization, EPA required that the re-injected water not be significantly chemically altered; however, EPA was concerned with the chemicals that Duke Energy Wythe would actually be adding to the Mine water in order to treat it. Duke Energy Wythe provided EPA with a list of these chemicals, which EPA determined were all standard water treatment chemicals, which break down and do not persist in the water. Even though these chemicals are added as part of the treatment process, the water is not significantly altered chemically. (Tr. at 695-706).

well. Once the water is run through the boiler a few times, it is no longer as pure but is still acceptable to be used in the cooling tower. Some of the boiler water will be cycled to the cooling tower as a way to reuse the water. (Tr. at 695-700).

Mr. Lesner testified the Company has no plan to treat the Austinville Mine water to be used solely for cooling prior to such use, because the lead and zinc present in the water are not harmful to the cooling process. Also, Duke Energy Wythe would have to treat a significantly greater volume of water prior to use than if it were to treat only discharge water. Treatment of such a large volume, from four million gallons per day ("MGD") to seven MGD, instead of the less than one MGD of return water, is not practical or cost efficient. (Tr. at 433-34; Ex. 8, at 7-9).

2. Impacts on New River.

As to the New River, Mr. Lesner testified upon review of the federal (16 U.S.C. §§ 1271-1287) and state designations (Va. Code Ann. §§ 10.1-400 et seq.), Duke Energy Wythe has determined that parts of the New River in North Carolina, and from the U.S. Highway 460 Bridge in Virginia moving downstream into West Virginia, are designated as Wild & Scenic Rivers. However, the New River in the part of Wythe County where the Facility will be located, is not designated as a Wild & Scenic River. The New River in Virginia is designated as an American Heritage River under Presidential Executive Order 13061, dated September 11, 1997; that designation has no regulatory consequences for the Facility.

As discussed in more detail below, Staff suggested that Duke Energy Wythe agree to restrict water withdrawals during periods of low flow on the river. Mr. Lesner testified it would not be reasonable for the Company to restrict water withdrawals from the Austinville Mine during low-flow conditions, because the amount of water the Facility would take from the New River through inflows to the mine will be miniscule and almost immeasurable, and will have no material impact on the river flows. Mr. Lesner suggested the most likely cause of a flow reduction would be a malfunction of the dam operating upstream. He testified that even if the Company were to stop withdrawing mine water, this would not necessarily stop inflow from the river to the mine. (Tr. at 442-45).

As an alternative to Staff's suggestion, in the event the New River was at a minimum in-stream flow condition, Mr. Lesner indicated that Duke Energy Wythe would be willing to pump water from the Austinville Mine back into the New River in an amount equivalent to the amount the Facility is taking indirectly from the river through inflows to the mine. This flow augmentation could be implemented immediately, as there is already an outflow point from the mine for the Company to pump water to the river. (Tr. at 667-71).

3. Effect on Wells/Water Spillage.

Mr. Lesner testified withdrawal of water from the Austinville Mine should not affect nearby wells, and Duke Energy Wythe has committed to the DEQ that to the extent anyone's water supply is interrupted due to Duke Energy Wythe's withdrawal, the Company will provide either an alternate water source or some type of remediation. The Company also plans to continue with

testing and studies to establish a baseline groundwater level currently around the mine site. (Tr. at 429-32).

Mr. Lesner testified if the water line carrying water from the Austinville Mine to the Facility or vice versa were to break, Duke Energy Wythe would know it immediately and would stop pumping. If a break were to occur in the line, it would be unlikely to affect any areas outside the zone of influence. The Company would bear the cost of fixing the line in the event of any breakage. (Tr. at 433-35). Mr. Lesner also noted that a spillage would not necessarily be harmful. Although the raw mine water does not meet drinking water standards, it is not hazardous or caustic and Mr. Lesner testified, it smells and tastes like "regular water." In fact, Mr. Lesner drank the mine water. (Tr. at 665-66). The mine water is currently used by Austinville Limestone every day for dust control and was pumped into the New River for hundreds of years. Any water spillage would be no different than a water main breaking on the street. There would be no need to treat any pipe breakage as a toxic spill cleanup. (Tr. at 664-67).

4. Use of Wet-Cooling Technology.

Mr. Lesner also addressed the Facility's use of wet-cooling technology. The type of dry-cooling used for power plants is direct dry-cooling such as air-cooled condensers ("ACCs"). In ACCs, steam from the steam turbine exhausts directly to a manifold radiator system that rejects heat to the atmosphere, condensing the steam inside the radiator. Wet-cooling systems use evaporative heat transfer as the mechanism for removing heat (and condensing steam). Wet-cooled condensers work by passing water through a condenser and then transporting the heat (via the cooling water) to a cooling tower. In the cooling tower, the cooling water is exposed to the ambient air, where evaporation takes place. Through the evaporation process, heat in the cooling water is rejected to the atmosphere. The key feature of dry-cooling systems is that no evaporative cooling or release of heat to surface or subsurface waters occurs. (Ex. 8, at 17-18).

Mr. Lesner stated the use of dry-cooling is very uncommon for power plants in the United States, because dry-cooled systems have a number of significant disadvantages when compared to wet-cooling. Dry-cooling is typically used only in arid climates where there is an inadequate supply of water, which is not the case at the Wythe site. Wet-cooling is the most common technology in the world for the removal of waste heat, and is used by most power plants because wet-cooling is much more efficient and cost-effective. (Ex. 8, at 17-19). Dry-cooled systems significantly reduce steam cycle efficiency and power plant output. Reducing efficiency increases the amount of air emissions per megawatt produced because more fuel must be consumed to produce the same output. Recently, the EPA, as part of its rulemaking under Section 316(b) of the Clean Water Act, evaluated dry-cooling and determined that the inefficiency inherent in dry-cooling systems is inconsistent with the principle of energy conservation and rejected the notion of mandating dry-cooling systems. (Ex. 8, Attachment PL-R-16).

In its report, the EPA compared the capital costs of equally sized combined-cycle plants for wet- and dry-cooling systems and determined the capital costs of dry-cooling systems are 3.3 times greater than that of wet-cooling systems. The cost to operate and maintain dry-cooling systems is more than four times greater than that of wet-cooling systems according to the EPA. As a result of its study, the EPA concluded that dry-cooling does not represent the "best technology available" for

minimizing adverse environmental impacts. The EPA also concluded that dry-cooling reduces energy efficiency and leads to higher air emissions than wet-cooling. (*See*, Ex. 18 (National Pollutant Discharge Elimination System: Regulations Addressing Cooling Water Intake Structures for New Facilities, 66 Fed. Reg. 65256, 65,282-65,284 (Dec. 18, 2001)).

Mr. Lesner indicated dry-cooled condensers are significantly larger, and therefore require and disturb more land than wet-cooled systems. An ACC for a dry-cooling system would be approximately 237 feet by 195 feet at its base and would be more than twice as tall as the wet-cooling tower proposed for the Duke Energy Wythe Facility (110 ft. vs. 50 ft.). Dry-cooling systems also can have more impact on the viewshed because of the increased size, and have greater noise impacts than wet-cooling systems. Significantly more fans and greater airflow are required in dry-cooling systems than wet-cooling systems. Also, in the case of the Duke Energy Wythe Facility, the inclusion of a dry-cooling system will not eliminate the need to develop a water source from the mine for other plant processes, including the steam process. (Ex. 8, at 17-19.)

Mr. Lesner testified Duke Energy Wythe considered the feasibility of dry-cooling, but rejected it because of: (1) the availability of a water source, (2) the adverse environmental impacts associated with dry-cooling, and (3) economic considerations. The Company has concluded that wet-cooling technology is the best alternative; dry-cooling would have a significant impact on the viewshed and noise, would decrease the Facility's efficiency, and result in higher air emissions per megawatt. (Tr. at 427-28). If dry-cooling were required at the Facility, it would be less efficient and its output would be reduced by 25 MW, roughly the energy required to supply 25,000 homes. (Tr. at 659-63).

5. Unused Acreage.

Mr. Lesner next addressed Duke Energy Wythe's plans for the use of acreage that will not be used for the Facility. The remainder of the 715-acre tract on which the Company will build the Facility, which has not been developed and is used as pastureland, will serve as a visual and sound buffer for the Facility. If Duke Energy Wythe does elect to sell a portion of the buffer area to an adjacent property owner, these parcels will not materially impact the buffer area. Because the site is currently pastureland, operation of the Facility will not materially disturb the site or change its character. Further, the site is completely surrounded by utility line rights-of-way. The viewshed immediately around the Facility consists of high voltage transmission lines, a substation, and numerous unused power line easements. (Ex. 8, at 11, PL-R-10). Because of the existing utility rights-of-way, Mr. Lesner testified that a conservation easement for the unused property around the Facility site is not practical and would serve little purpose. (Tr. at 649-53).

Mr. Lesner indicated that although Duke Energy Wythe is not precluded from selling a portion of the acreage to a noxious use such as a paper company, it is not necessary to place a conservation easement on the remainder of the site to protect against such sales. The Company desires to maintain a buffer around the Facility, and does not want to sell to any noxious users that may hurt Duke Energy Wythe's standing in the community. The Company is currently considering selling a portion of the unused acreage to an adjacent farm for an expansion of its livestock business, and would not want a conservation easement to interfere with such sale. (Tr. at 709-17).

6. Waste Generation/Roadways.

Mr. Lesner stated Duke Energy Wythe will minimize the generation of waste through the implementation of pollution prevention measures, which are designed to limit the amount of materials/chemicals brought on-site, and encourage recycling. Acid washes during the life of the plant would be required only under very specific and unlikely circumstances, and the Company does not intend to perform acid washing. If it is ever required, Duke Energy Wythe will collect the spent acid and associated wastes and dispose of them offsite via an authorized subcontractor. (Ex. 8, at 12). After having reviewed the Superfund site list for Virginia and EPA's databases, Mr. Lesner determined that the Austinville Mine is not a Superfund site. (Ex. 8, at 13).

Mr. Lesner also addressed the adequacy of existing roadways around the Facility. Mr. Lesner stated Duke Energy Wythe worked with VDOT to determine the adequacy of existing roads to accommodate the Facility. After completing its assessment of Route 608 (the route by which the Facility will be accessed), VDOT indicated a roadway line of site distance of 260 feet is required. The Company will achieve this by excavating back approximately 45 feet of Duke Energy Wythe's property on the northern side of the intersection. With that change, the existing road will be adequate according to VDOT. (Ex. 8, at 13-14).

7. Impact on Tourism.

Mr. Lesner testified Duke Energy Wythe considered the potential impact of the plant on the viewshed, noise, water quality, air, and transportation. The Company engaged a firm to provide photographic simulations of the area, by placing computerized images of the Facility on actual photographs taken at various locations in the area, selected based on the highest potential for the Facility to be visible. The results of this simulation show the Facility will be invisible from almost all areas of the park. Although the very top of the Facility will be visible from a few areas of the park, it will be indistinguishable from the electric transmission equipment already present. (Ex. 8, at 14, Attachment PL-R-13). Further, although there are high voltage transmission lines and an electrical substation clearly visible from many park areas, the number of visitors to the park has actually increased over the past year, suggesting that even if the Facility were visible, it would not impact the level of visitors to the State Park or the New River generally.[12] (Ex. 8, Attachment PL-R-14).

To evaluate the noise impact of the Facility, Duke Energy Wythe conducted studies to determine the potential noise impacts of the Facility, specifically analyzing the potential impacts at locations within the State Park. Those studies estimate the sound level due to Facility operations to be 31 dBA (decibels) near the park entrance (approximately 7500 feet from the Facility), which is less than the noise level that was measured for existing conditions at the park. (Ex. 8, at 15). The ten local businesses that primarily cater to recreation and tourism should not be adversely impacted by the Facility.

[12] Mr. Lesner noted that the Environmental Assessment provided to the Commission by Duke Energy Wythe was prepared to satisfy the requirements of 20 VAC § 5-302-20(12) and does not have to be certified by a Professional Engineer. Preparation of the Environmental Assessment is not the practice of engineering as defined in Va. Code Ann. § 54.1-400. (Ex. 8).

8. Economic Benefits.

Mr. Lesner also addressed the economic benefits of the Facility. On June 17, 2002, the Chamber of Commerce of Wytheville, Wythe County and Bland County adopted a resolution supporting the Facility. (Ex. 8, PL-R-2). The Facility will represent the largest single private industrial development ever proposed in Wythe County, and will likely become the largest single private property taxpayer as well. The economic benefits of the Facility will come primarily from the increased tax base the Facility will add to Wythe County, as well as the employment of approximately 400 construction workers and 24 permanent employees at the Facility. Duke Energy Wythe expects the majority of these positions to be filled locally. In fact, at another Duke Energy Wythe facility just four hours north of Wytheville, Duke Energy Wythe was able to hire 16 out of the 22 permanent employees from the local area. The permanent positions at the Facility pay very well, and will represent an annual payroll of $1.6 million. (Ex. 7, at 4; Tr. at 422-25).

Duke Energy Wythe will also contribute to the community by encouraging its employees to volunteer time to community and charitable causes, and to assume leadership roles in various community organizations. Duke Energy itself has operated various scholarship programs in areas where it has plants, and also contributes regularly to organizations such as the United Way. In one location where Duke Energy operates a plant, 10% of the local United Way's budget comes from Duke and its employees. (Tr. at 637-42). Duke Energy has also received numerous awards from environmental organizations, recognizing its environmental stewardship and activities, including the National Wildlife Federation and the National Soil and Water Conservation Society. (Tr. at 653-54).

Mr. Lesner testified although the larger and more technical equipment to be installed in the Facility, such as the turbines and boilers, cannot be purchased locally, many of the other materials will be purchased locally. For example, all of the concrete and stone could be purchased from local suppliers, as could fencing, lumber, small hand tools, safety equipment, and portable toilets. Even if certain items are not purchased locally, some purchased items likely have local distributors or representatives who will benefit. Mr. Lesner indicated the Facility and its construction would expand current businesses. This will occur due to the Facility's need for items that can be purchased locally, such as small tools, or for the performance of services that can be performed locally, such as repairing small equipment. (Tr. at 642-45).

As to the effect of the Facility's water withdrawals on the existing limestone business at the site, Mr. Lesner indicated the existing limestone operation is conducted aboveground, and should not interfere with Duke Energy Wythe's plans to withdraw water from the Austinville Mine. Austinville Limestone representatives have indicated they would like to continue their operations after Duke Energy Wythe purchases the mine property. Duke Energy Wythe and Austinville Limestone have agreed that their mutual operations will not interfere with each other. (Tr. at 646-47).

9. Natural Gas Supply.

Mr. Lesner also addressed the supply of natural gas to the Facility. The natural gas pipeline (the "Patriot Extension") to be constructed by ETNG will traverse the Facility site and supply natural gas to the Facility.[13] Mr. Lesner indicated that if the Patriot Extension were not approved by FERC, Duke Energy Wythe would reevaluate its ability to move forward with the Facility, and evaluate alternative sources of natural gas. Duke Energy Wythe might consider construction of a lateral pipeline from the existing ETNG interstate pipeline, which is approximately 12 miles to the north-northwest of the site, to the Facility. (Tr. at 647-48).[14]

B. Mr. Collins.

Mr. Collins filed direct and rebuttal testimony, and also testified at the hearing on June 26, 2002. Mr. Collins stated the Facility site is suitable for development of a project such as the proposed Facility due to the availability of natural gas, electric transmission infrastructure, water, and its remote location. Mr. Collins explained that exhaust from the combustion turbines would be directed to the heat recovery steam generators. Pipeline quality natural gas will be the only fuel for the turbines and the generators. Auxiliary equipment for the Facility will include an auxiliary boiler, a cooling tower and water treatment system. (Ex. 10, at 2).

Mr. Collins discussed the Facility's water requirements, noting that a pumping station facility will be located at the Austinville Mine and a 20-inch pipeline will pump water to the plant site. Construction of the pumping facility and pipeline requires DEQ, U.S. Army Corps of Engineers ("Corps"), and Virginia Marine Resources Commission ("VMRC") approvals. The quantity of mine water (1.8 billion gallons) and the maximum inflow rate of 10,900 gallons per minute ("gpm") are more than adequate to serve the Facility. Facility operations will produce water effluent of cooling tower "blowdown," wastewater and stormwater, which will be discharged back into the mine. During the hearing, Mr. Collins testified the cold lime softening process Duke Energy Wythe plans to use to treat water before returning it to the mine will reduce concentrations in the water back to levels at or below raw mine water levels. Mr. Collins also testified the cold lime softening process is the standard, accepted process for removing metal from water. (Tr. at 502-03). To ensure compliance with all environmental laws and regulations, Duke Energy Wythe will establish an Environmental Management System ("EMS") consisting of an environmental health and safety policy. (Ex. 10, at 7-9).

Mr. Collins addressed the status of required permits for the Facility. Mr. Collins stated the DEQ approved the modeling protocol for performing an air quality analysis to support the Facility's PSD air permit application on April 20, 2001. (Ex. 11, Attachment WC-R-1). The results of the air dispersion modeling supporting the Facility's PSD application were approved by DEQ on June 6, 2002. (Ex. 11, Attachment WC-R-2). On March 11, 2002, the EPA issued a rule authorization allowing the discharge of wastewater from the Facility into the mine pursuant to the UIC program. Following the EPA's issuance of the rule authorization, the DEQ advised the Company on May 2,

[13] East Tennessee Natural Gas Company is an affiliate of DENA. The Patriot Extension is the subject of Case No. CP01-415-000 now pending before the Federal Energy Regulatory Commission ("FERC").

[14] Mr. Lesner also testified that Duke Energy Wythe does not intend to store or scrub natural gas at the Facility. (Ex. 8, at 20).

2002, that it concurred with the issuance of the UIC rule authorization and that no DEQ permit would be required for the proposed water discharge into the Austinville Mine. (Ex. 11, at 4-5).

1. Air Quality Impact.

Mr. Collins also described the process Duke Energy Wythe went through to demonstrate the Facility would not adversely affect air quality in the areas surrounding the Facility. Duke Energy Wythe submitted a PSD Permit Application to the DEQ in September 2000, and supplemented it in September 2001. The PSD permit application was included in the Environmental Assessment for the Facility. (Ex. 10, Attachment WC-2, Tab 4).

Mr. Collins testified in order to meet the PSD best available control technology ("BACT") emission limits, the Facility will use dry low-NO_x combustors in each turbine, and a SCR system will be installed to further reduce NO_x emissions to 2.5 parts per million by volume ("ppmvd") at 15% oxygen while firing natural gas. Sulfur dioxide ("SO_2") and particulate matter ("PM_{10}") emissions will be minimized through the use of natural gas. Carbon monoxide emissions will be controlled by combustion controls. (Tr. at 552; Ex. 10, at 1-2).

A PSD permit applicant must also demonstrate the proposed facility will not cause or contribute to an exceedance of applicable National Ambient Air Quality Standards ("NAAQS") or PSD increments. Compliance with NAAQS and PSD increments is determined through the application of atmospheric dispersion models. These computer models predict whether or not any of a facility's emissions will cause an increase in ambient concentrations above minimal significant impact levels ("SILs") of any regulated air pollutant and the amount of the PSD increment that the facility could potentially utilize. The significance levels are set very low, a small fraction of the NAAQS (e.g., the significance level for NO_x is only one percent of the NAAQS). (Ex. 10, at 4). Moreover, the simulation model is conservative. (Ex. 10, at 3-4). If through modeling a facility demonstrates that its emissions will not exceed any of the significance levels, then the facility's air emissions are deemed too small to have any measurable adverse impact on air quality. (Tr. at 487). If modeling demonstrates a facility's emissions will result in an increase in ambient concentrations that exceed the significance levels, the applicant is required to conduct more complex modeling. This modeling takes into account the effect of the facility's emissions, together with those of existing sources and known proposed sources affecting the area modeled, and determines the amount of the emissions increment that could be utilized. (Tr. at 550-51).

Mr. Collins testified the modeling assumes that emissions from continuous operation at maximum duty (i.e., at full load) will occur 24 hours per day, 365 days per year. It is conservative to assume the Facility will run every day of the year for 24 hours a day, and maximum duty only occurs at low temperature conditions. (Ex. 10, at 2-3). Duke Energy Wythe also assumes in the modeling that the meteorological conditions are worst-case, meaning that it conducts the modeling assuming it is summertime and there is hot, stagnant air. The Company uses the worst-case, unrealistic assumptions in order to develop a conservative emissions model, representing worse-than-worst case scenario. (*Id*. at 3-4). In this case, the worst case potential emissions from the Duke Energy Wythe Facility exceeded the SILs for NO_x (annual), PM_{10} (annual and 24-hour), and SO_2 (annual and 24-hour) additional cumulative multi-source modeling was, therefore, triggered. Mr. Collins expressed his belief that the exceedance of the trigger for additional modeling was

caused by the complex terrain in the area surrounding the Facility site and the ultra-conservative assumptions in the screening model. (Tr. at 551; Ex. 10, Attachment WC-2, Tab 4; Ex. 11, Attachment WC-R-1). Although the highest modeled concentrations of SO_2, NO_x, and PM_{10} for the Facility exceeded the SILs for those pollutants, the Facility will not cause or contribute to an exceedance of the NAAQS or the PSD increments for SO_2, NO_x, and PM_{10}. Additionally, Mr. Collins testified that DEQ has reviewed the results of the PSD cumulative multi-source modeling and determined that the Facility will not cause or contribute to a violation of the PSD increment or any NAAQS. (Ex. 11, Attachments WC-R-2 and WC-R-4; Ex. 10, Attachment WC-2, Tab 4).

In addition to the air quality analyses conducted for the protection of health and human welfare, additional air analyses are conducted to ensure no adverse effect on designated national parks and wilderness areas (Class I Areas). Federal Land Managers have defined "air quality related values" ("AQRVs") such as visibility and haze. Mr. Collins testified the analyses for the Facility demonstrate that the Facility will not adversely impact any AQRVs in Class I Areas. The only Class I areas within 200 km of the proposed Facility are the Linville Gorge Wilderness Area in North Carolina and the James River Face Wilderness Area. The State Park is not a designated Class I Area. The results of the analyses contained in the PSD permit application demonstrate that, even assuming the maximum potential air quality effects, the proposed Facility will not adversely impact any AQRVs in nearby Class I Areas. (Ex. 10, WC-2, Tab 4). The Forest Service has determined that the Facility will not have an adverse impact on any AQRVs at the James River Wilderness Face or in the Linville Gorge Wilderness Area. (Ex. 11, Attachments WC-R-8 and WC-R-9).

Because the State Park is not a designated Class I area, the impacts of the Facility on the park were considered in the Class II modeling for the Facility. Mr. Collins testified the maximum impacts of the Facility occur to the south-southeast and south-southwest of the Facility. The maximum impacts of the Facility are not expected to occur in the State Park area, which is northwest of the Facility site, because the prevailing winds in the area predominantly blow from the State Park to the Facility site. (Ex. 11, Attachments WC-R-1 and WC-R-10).

As to the cumulative air quality impacts of the Facility, Mr. Collins testified the current air quality in Wythe County and surrounding counties is good and in attainment with all NAAQS. Duke Energy Wythe retained ENSR International ("ENSR") to conduct a Cumulative Impact Analysis. While there is no DEQ- or EPA-approved method of assessing cumulative air impacts from proposed and existing air pollution sources in the manner required by the Commission in *Tenaska Virginia*, Duke Energy Wythe determined the cumulative air quality impact attributable to a given project is the effect of the incremental impact of the project when added to background air quality (including the effects of all existing emissions sources) and the air quality impacts of reasonably foreseeable future projects. The Company thus analyzed whether the air quality impacts of the Facility, when added to the background air quality and the air quality impacts of reasonably foreseeable future electric generation projects, would cause or contribute to some impact on public health and the environment, such as a potential violation of NAAQS. (Tr. at 485). Duke Energy Wythe and DEQ agreed that this Cumulative Impact Analysis is a reasonable method to identify the incremental impact of the Facility, the combined effect of all 23 proposed electric generation facilities, and to analyze the cumulative impact of all 23 projects on existing air quality (which is the sum of the combined effects and worst-case background air quality.) (Ex. 11, at 6-7).

To account for the potential air quality impacts in Wythe and surrounding counties from the Facility and 22 other new or proposed electric generation facilities for which air permit applications had been submitted to the DEQ through January 25, 2002, ENSR used the following methodology:

(1) The highest monitored background concentrations from five years of records were used to estimate worst-case background air quality for the Wythe County area.
(2) ENSR gathered information on the proposed generating stations and performed the modeling for NO_x, SO_2, carbon monoxide, and PM_{10}.
(3) Emissions were modeled at the maximum levels requested in DEQ air permit applications, or the maximum levels authorized by DEQ for those facilities that have been issued air permits.
(4) The modeling used EPA's latest approved Industrial Source Complex ("ISC") software and followed all EPA and DEQ protocols. The computer software uses the stack height, emission rate, and meteorological information to calculate the ground level concentration of each pollutant. (Ex. 11, at 9-10, Attachment WC-R-4).

Regarding the results of the cumulative impacts modeling described above, Mr. Collins' testimony referred to the bar charts in Figures 3-1 through 3-8 of the ENSR report. (*See*, Ex. 11, Attachment WC-R-4). Mr. Collins believes that these are very helpful in understanding the relevant modeling results and appropriate benchmark against which to evaluate those results. The incremental impacts of the Facility were compared to the single-source SILs. Although the Facility's highest modeled concentrations of NO_x and PM_{10} exceeded the SILs, the Cumulative Impact Analysis, which considers both existing and proposed sources, demonstrates that the Facility's impacts on NO_x and PM_{10} concentrations are well below both the NAAQS and the PSD increments. (Tr. at 488-89; Ex. 11, at 11, Attachment WC-R-4). Next, the combined effects of all 23 generating facilities were compared to the allowable PSD increments, which serve as an appropriate benchmark against which to measure the impacts from multiple sources. The combined impacts of the 23 existing or proposed facilities are below the allowable PSD increments in all cases, and, in some cases, are below the single-source SILs. (Tr. at 488; Ex. 11, Attachment WC-R-4).

In his testimony, Mr. Collins stated he believed the results of adding the predicted impacts of all of the proposed electric generation facilities to worst-case background air quality, demonstrate again that the Facility will not significantly degrade existing air quality and will not cause or contribute to a violation of any NAAQS. Mr. Collins' testimony also addressed cumulative impacts from the 23 existing or proposed facilities on ozone concentrations. Due to the complexity of ozone modeling, ENSR incorporated into its Cumulative Impact Analysis the results of ongoing ozone modeling performed by the DEQ for 16 existing or proposed facilities. (Tr. at 490). The DEQ's predicted impacts on ozone concentration for 16 plants, scaled up to reflect the impacts from all 23 existing or proposed plants are almost negligible compared to current ambient levels and will not cause or contribute to a violation of the NAAQS in the area. (Tr. at 491; Ex. 11, at 12, Attachment WC-R-5).

Mr. Collins also testified there were several conservative features built into the Cumulative Impact Analysis, which ensured the analysis overstated the predicted impacts. For example: (1) the highest monitored background concentrations were used to estimate worst-case background air quality at all locations and at all times; (2) the model analyzed all 23 facilities, even though a much smaller number of projects will likely be built; (3) the ISC model is conservative because it overstates impacts from distant units; (4) the modeling assumed all 23 facilities were operating at their maximum rate, even though the actual permits will likely contain lower maximum allowable emission rates and actual emission rates are usually much less than potential rates; (5) the models do not account for the emission reductions that will result from any of the regulatory programs for emissions reductions currently in place or that are being implemented; and (6) the model did not reflect reduced emissions from other utility sources that would be dispatched off (displaced in the generation queue or by transmission constraints) by the 23 facilities operating at their maximum rate. (Tr. at 492-94; Ex. 11, at 13-18, Attachment WC-R-4 at 1-3).

Mr. Collins also discussed the various programs established by the Clean Air Act to control NO_x emissions and ozone formation. One such rule promulgated by the EPA requires revisions to the State Implementation Plans ("SIP") of eastern states to reduce NOx emissions and establish a cap and trade program, referred to as the "NO_x SIP Call." Under the NOx SIP Call, the EPA established a summertime cap on NO_x emissions, which is considerably lower than current emissions. Compliance is required by May 2004. (Ex. 11, at 15-16).

Relative to EPA's projected 2007 baseline, the NO_x SIP Call will reduce NO_x emissions by over 100,000 tons per year from all Virginia sources, thereby reducing NO_x emissions as well as ozone formation (for which NO_x is a precursor) and visibility impacts related to ozone. The NO_x SIP Call is predicted to reduce background levels of ozone by 14 to 18 parts per billion. (Tr. at 494; Ex. 12).

The Virginia NO_x Budget Trading Program was adopted in a final rule published in the Virginia Register on June 17, 2002, and is set forth in 9 VAC 5-140 et seq. *See*, 18 Va. Regs. Reg. 2,653-2,657 (June 17, 2002). Beginning in May of 2004, the DEQ will allocate 17,091 tons per ozone season to all existing and new large electric generating units. This 17,091 ton budget will apply no matter how many power plants are built. Without the NO_x SIP Call, the allowed NO_x emissions from large electric generating units in Virginia would be about 41,000 tons per ozone season (May through September) in 2007. For each summer ozone season, any units that emit NO_x in amounts greater than the total allowances held will be subject to enforcement action by DEQ and EPA. (Tr. at 494-96; Ex. 11, at 15-16; Ex. 12).

Under current Virginia law, any facility that commences operation from January 1, 1998, to January 1, 2008, will share in a total new unit set-aside of 5% of the total NO_x budget (855 tons). Existing and new large electric generating units must operate within the overall NO_x allocation budget (16,236 tons). Mr. Collins believes that clean-burning plants like the Facility will help to ensure that this goal is met. (Ex. 11, at 15-16).

2. Hazardous Air Pollutants.

With regard to emissions of lead and other hazardous air pollutants ("HAPs"), Mr. Collins testified that the Facility will not be a major source of HAPs, and its emissions will fall significantly below both the state and federal levels established to protect public health and the environment. (Tr. at 482).

Although the Facility will not be a major source of any HAPs emissions, much like the PSD program requirements, Virginia law requires an additional air quality impact analysis, including dispersion modeling, for air toxic emissions that are expected to exceed certain exemption levels. (Tr. at 498-99). Mr. Collins testified Duke Energy Wythe provided a HAPs analysis in its PSD permit application submitted to the DEQ. That analysis demonstrated that the combustion activities at the Facility would not contribute to any violation of any Virginia Significant Ambient Air Concentration ("SAAC"). (Tr. at 496-97). Because cooling tower emissions from the Facility are very low, the DEQ-approved modeling protocol for the Facility did not require modeling of the Facility's cooling tower emissions. (Tr. at 496). Duke Energy Wythe subsequently performed an additional analysis of the predicted HAPs emissions from the Facility's cooling tower. (Tr. at 497; Ex. 11, Attachment WC-R-11). Both the initial PSD HAPs modeling and the subsequent cooling tower HAPs modeling assumed worst-case operating conditions (i.e., most unfavorable), including a modeling assumption that the mine water used in the cooling tower will go through five cycles of concentration. (Tr. at 497-98; Ex. 11, Attachment WC-R-11).

Mr. Collins testified even under worst-case modeling, and including worst-case predicted cooling tower emissions assuming use of worst-case mine water after five cycles of concentration, the Facility's predicted emissions were below state and federal levels designed to protect public health and the environment. The Facility's total worst-case predicted lead emissions are 0.00906 tpy and are less than the significance threshold. (Tr. at 497-98; Ex. 10, Attachment WC-2, Tab 4 § 3; Ex. 11, Attachment WC-R-11). Although the Facility's worst-case predicted cadmium emissions will exceed the DEQ exemption levels, the modeling demonstrates that concentrations of cadmium emissions during worst-case modeling scenarios will fall significantly below the appropriate SAAC and satisfy compliance standards. (Ex. 10, Attachment WC-2, Tab 4 § 7.2; Ex. 11, Attachment WC-R-10). Mr. Collins testified that zinc, iron, fluoride, and chloride are not criteria pollutants or HAPs regulated under the Clean Air Act. (Tr. at 516).

Further, Mr. Collins testified emissions of metals from the Facility's cooling tower will be minimized by the utilization of drift eliminators that control emissions of particulate matter of ten microns or less ("PM_{10}"). (Tr. at 499-503). Without the drift eliminators, particulate matter is released from the cooling towers contained within tiny water droplets. Drift eliminators contain the water within the cooling towers. (Tr. at 499-503). To improve evaporation rates, cooling towers are designed to induce a flow of fresh air across a large wetted surface area (called "fill"). (Tr. at 500-01). This induced air flow, however, entrains some of the fine water droplets, which are carried out of the tower, referred to as "drift." The drift eliminators liberate the total dissolved solids that were formerly in solution as emissions of particulate and PM_{10}. (Tr. at 501-02). Drift eliminators represent BACT for particulate and PM_{10} emissions from evaporative cooling towers. (Ex. 10, Attachment WC-2, Tab 4 at 4-29 to 4-30). According to Mr. Collins, the Facility's drift

eliminators are expected to reduce drift emissions from the Facility's cooling tower by at least 99.999%. (Tr. at 499, 514, 531).

3. Ground-level Fogging.

Regarding the impact of fogging in the area and particularly at the Jackson Elementary School, Mr. Collins testified that ENSR, an environmental consultant for Duke Energy Wythe, provided a professional opinion indicating that it expects no impacts due to Facility-induced fogging beyond three kilometers of the cooling tower. (Tr. at 508-09). Because Jackson Elementary School is approximately 3.23 kilometers from the Facility site, the Company, therefore, expects no impact on the school from ground-level fog induced by the Facility's cooling tower. (Tr. at 509; Ex. 11, at 20-21, Attachment WC-R-12). Further, the Company is committed to addressing any fogging problems through its Integrated Contingency Plan. (Tr. at 509).

4. Stormwater Management.

With regard to stormwater management, Mr. Collins testified an erosion and sedimentation plan is being developed for the Facility consistent with generally accepted industry practice and in accordance with the Virginia Erosion & Sediment Control Handbook, Virginia Erosion and Sediment Control Law (Va. Code §§ 10.1-560 et seq.) and consistent with County requirements for stormwater management. (Tr. at 482; Ex. 11, at 21).

Additionally, because the project will disturb at least five acres of land, Duke Energy Wythe will need to obtain a Virginia Pollutant Discharge Elimination System ("VPDES") Stormwater General Permit. The Company has hired a consultant to prepare a VPDES Stormwater General Permit application for the Facility. (Ex. 11, at 21).

5. Wetlands and Threatened/Endangered Species.

Mr. Collins testified Duke Energy Wythe engaged ENSR Corporation to conduct a wetland reconnaissance and threatened/endangered species habitat evaluation of the proposed water supply and discharge pipeline route from the Austinville Mine to the proposed Facility. The ENSR analysis indicates no jurisdictional wetland areas were observed within the proposed pipeline route corridor. (Ex. 11, Attachment WC-R-13). Two perennial streams subject to § 404 of the Clean Water Act will be crossed by the proposed waterlines, but, according to Mr. Collins, the Company will directionally bore under these streams and thus will have no direct impact on the streams. (Tr. at 483).

None of the state or federally listed threatened/endangered species potentially occurring in the project area were observed during the ENSR reconnaissance. Based on the habitats present within and along the proposed pipeline corridor, no adverse impacts to these species would be expected as a result of construction of the water supply/discharge pipelines. (Ex. 11, Attachment WC-R-13).

6. Noise Impact.

Mr. Collins testified Duke Energy Wythe conducted studies to determine the impact from the sound created by the proposed Facility. The studies specifically analyzed the potential impacts at locations within the State Park and at the nearest residences. (Tr. at 506-07; Ex. 11, Attachment WC-R-14). Those studies estimated the Facility sound levels to be 31 dBA (decibels) near the entrance to the park, which is approximately 7,500 feet from the Facility. (Ex. 11, Attachment WC-R-14). These results were less than the measured noise data for existing conditions at the park. (Tr. at 506-07; Ex. 11, Attachment WC-R-14). Mr. Collins testified that nearby roadways, including Interstate 77, are probably the largest contributors of background noise in the park. (Tr. at 539). The noise studies also estimated the maximum sound level from worst-case operation of the plant to be 46 dBA at the nearest residential receptor. Facility sound levels at all other residential receptors surrounding the project site are expected to be considerably lower. As such, noise levels attributable to plant operations will be less than EPA guidelines for outdoors sound exposure at all residences surrounding the Facility site. For perspective, Mr. Collins testified that normal conversational speech at 5 to 10 feet is usually estimated to be approximately 60 dBA. (Ex. 11, Attachment WC-R-14).

7. Light Impact.

As to light impacts from the Facility, Mr. Collins testified that the Facility will need to be lighted for safety and security reasons and to comply with Occupational Safety and Health Administration ("OSHA") regulations. Mr. Collins testified that exterior lighting for the Facility will be directed downward and inward through the use of shielded lighting in order to minimize glare from the Facility. (Tr. at 507; Ex. 11, at 23). Although there is no direct view of the plant site from Foster Falls, Mr. Collins stated on foggy nights or nights with high humidity, people at Foster Falls State Park may see some glow from the Facility, but those same factors, fog and high humidity, will themselves reduce visibility for stargazing. (Tr. at 508).

8. Emergency Planning.

Mr. Collins testified the Facility will have an Integrated Contingency Plan that incorporates various statutory and regulatory requirements regarding emergency response and sets forth the appropriate response measures for various emergencies, including plans for warning the public and contacting local authorities. (Tr. at 509; Ex. 11, at 23-24). The Integrated Contingency Plan will incorporate federal, state, and local requirements, including requirements under the Emergency Planning and Community Right to Know Act, the Clean Air Act, the Clean Water Act, OSHA regulations concerning employee safety, and regulations related to process safety management. Employees at the Facility will be trained to respond to fires and other emergencies. The Facility will have on-site fire fighting equipment, including on-site water storage. Duke Energy Wythe provided a copy of an Integrated Contingency Plan from another Duke facility. The Integrated Contingency Plan details, for example, regulatory requirements for emergency planning and response plans; facility location and contact information; evaluation of and response to potential chemical release scenarios; and evaluation of and response to fire, flood, earthquake, bomb threats and medical emergencies. (Ex. 13).

Further, Duke Energy Wythe continues to implement, revise, and improve its environmental management system. (Ex. 11, at 24). That system includes pollution prevention and hazardous waste minimization. As required under the Resource Conservation and Recovery Act ("RCRA"), Duke Energy Wythe will minimize to the extent possible, the generation of hazardous waste through the implementation of methods and means designed to prevent and minimize the amount of waste generated. Liquid, solid, and hazardous waste will also be minimized through the implementation of pollution prevention measures. These measures are "front end" and are designed to limit the amount of materials and chemicals brought on-site, encourage recycling, and encourage the use of materials that do not present or that minimize environmental health risks. (Ex. 11, at 24).

C. Mr. Dailey.

Mr. Dailey filed rebuttal testimony and also testified at the June 25 and 26 hearings, providing details about the withdrawal of water from the Austinville Mine, the treatment of the discharge water, and the effect of withdrawals/discharges on flows in the New River, groundwater, and river water quality.

1. Availability/Source of Mine Water.

Mr. Dailey testified the Austinville Mine contains over 1.8 billion gallons of water, all of which is available through the Van Mater Shaft--the location of pumping. Duke Energy Wythe will use, on average, 4 MGD of water. The Facility's maximum water usage will be 7 MGD. (Ex. 4, at 8). On average, about 10-15% of the amount of water removed will be returned to the mine; the remaining amount is used in the cooling process and is evaporated. (Tr. at 392).

The October 2001 report prepared by Duke Engineering & Services ("DE&S Report"), initially recommended sites other than the Van Mater Shaft for the installation of pumping equipment. (Ex. 4, Attachment AD-R-3). Mr. Dailey indicated he initially recommended that pump intake locations be placed close to a discrete fault in order to reduce the length of pipeline and the amount of head that the pumps would have to work against to pump the water. However, because the water sampling was conducted at the Van Mater Shaft and this was a point from which Duke Energy Wythe could sample water through all levels of the mine, the Company later decided that the Van Mater Shaft was the best location for the pumps. (Tr. at 373-74).

Mr. Dailey indicated that the water in the Austinville Mine originates from both the New River and the groundwater aquifer, and that there is a hydraulic connection between the mine and the river. The recharge to the mine water from the river occurs as minor seepage over a broad network of small fractures in the river bed, rather than as a recharge at a particular point. With no pumping, the water level in the mine is approximately 15 feet higher than the river, and because water cannot flow uphill unless forced, water from the river is not currently flowing into the mine. (Ex. 4, at 4-5).

Several geo-technical and hydro-geological studies were conducted in the past to determine the exact source of the water in the mine. (Ex. 4, Attachment AD-R-3). The Roanoke engineering firm of Mattern, Seay and Seay ("Mattern") conducted the most important study in 1980. Mattern conducted exhaustive underground and surface water testing. Mattern performed a dye study by

releasing fluorescein dye into the New River, looking for the dye in underground locations, and measuring the time interval of the dye to each of the underground locations. Mattern also monitored for chlorophyll in the underground water. (Tr. at 386).

Those studies indicated that when water was removed from the mine at a rate of 15.4 MGD to keep the passageways and open areas dry at a depth of 1200 feet below ground surface for mine workers, 17% of the mine inflow came from the New River and 83% originated from groundwater sources. The majority of the New River inflow to the mine occurred at an area adjacent to the river known as "Chiswell's Hole." This pathway was subsequently blocked by the installation of a closed bulkhead door and grouting. Mr. Dailey indicated that before this door was closed, approximately 86% of the river water came in through this pathway. Considering these past studies and placing more weight on the most current and detailed study, Duke Energy Wythe anticipates that, when pumping resumes, less than 10% of the recharge inflow to the mine will come from the New River because of the closed bulkhead door and grouting, with the remaining 90% coming from the groundwater aquifer. The maximum amount of mine recharge water that could come from the New River is approximately 17%. (Ex. 4, at 5, Attachment AD-R-3; Tr. at 393-98).

Mr. Dailey indicated there are approximately 20 steel bulkhead doors installed in the mine, three of which are presumed to have been shut during the mine closure in 1981. These doors are designed to remain closed at over a thousand-foot depth of water pressure, and the bulkheads and grouting are submerged in a favorable environment for preservation. The expected useful lifespan for the doors and grout is greater than 100 years. (Ex. 4, at 5-6). When Mr. Dailey interviewed the mine workers they stated when they closed the door at Chiswell's Hole, they had to use a mining locomotive because the door was so heavy. Once the door was closed it was chained into place. Mr. Dailey has no doubt that the door is in the same condition today. (Tr. at 398). If, however, one of the closed doors were actually open, the only effect would be to increase the recharged water into the mine from the New River, to a maximum of 17%. (Tr. at 610-11).

The DE&S Report initially recommended robotic exploration of the mine and dye studies to verify flow paths and to determine how much water is passing around the bulkhead doors. (Ex. 4, Attachment AD-R-3, at 3-4; Tr. at 402, 409-11). Duke Energy Wythe did not conduct any new dye studies or robotic exploration. (Tr. at 386). At the hearing, Mr. Dailey clarified that his recommendation to conduct dye studies was conditioned on pumping occurring at specific points other than the Van Mater Shaft, and with pumping occurring at the Van Mater Shaft such dye studies are not required or reasonable. (Tr. at 412). Also, Mr. Dailey indicated that the initial purpose of his recommended robotic exploration was to evaluate the engineering design aspects of pump placement, not to study the interaction of the mine water with the river or surrounding groundwater. (Tr. at 612). Although Duke Energy Wythe is already conducting additional tests to establish a baseline groundwater level around the mine site, additional dye studies are not planned as they would be unlikely to provide information not already contained in the New Jersey Zinc studies and would be extremely difficult to conduct now that the mine is full of water. (Tr. at 611-12).

Mr. Dailey testified the withdrawal and return of water would have no effect on the structural integrity of the mine. The pump intake locations in the Van Mater Shaft will be in areas with a large unobstructed volume (i.e., not close to rock floors, walls or ceilings). The maximum water velocity in a confined horizontal drift in the mine will be 0.10 feet per second ("fps"). Water pipe design rules indicate as long as water flow is less than 10 fps the mine walls will not be scoured by the pumping. Thus, the maximum horizontal drift flow rate associated with pumping from the mine will be 100 times less than a rate that would cause scouring. (Ex. 4, at 9-10).

2. Effect on New River.

Mr. Dailey testified the average daily flow of the New River is 2,140 cubic feet per second ("cfs"), as measured at the Ivanhoe gauge maintained by the USGS. The Virginia Department of Game and Inland Fisheries set a minimum instream flow of 360 cfs for the New River in the area where the Facility will be located, as a condition in the FERC permits for Buck and Byllesby run-of-the-river dams. (Ex. 4, Attachment AD-R-4; Tr. at 370-71, 382, 595-97). Minimum instream flow is the water level necessary to support aquatic life. Mr. Dailey testified the $7Q10$[15] flow condition on the New River is 477 cfs, and that even at the reduced flow there is a sufficient buffer to protect aquatic life. (Tr. at 371).

Mr. Dailey indicated under average pumping, water from the New River will flow into the mine at a rate of approximately 0.6 cfs. A flow of 0.6 cfs represents less than 0.03% of the New River's average flow of 2,140 cfs. During the Facility's maximum water usage, pumping 7 MGD of water out of the mine, approximately 1.1 cfs will be recharged from the New River. During 7Q10 flow conditions in the New River, approximately 0.1% of the New River flow will flow into the mine. Under worst-case conditions, when the Facility requires 7 MGD *and* the New River is experiencing low flow conditions, only 0.2% of the New River flow would flow into the mine. Finally, even assuming minimum instream flow conditions in the New River of 360 cfs, less than 0.2% of the New River flow will flow into the mine. (Ex. 4, at 8, Attachment AD-R-4; Tr. at 369-71, 382).[16]

Accordingly, Mr. Dailey indicated that the beneficial uses of the river would not be affected by water withdrawals from the Austinville Mine. In addition, the industrial use of the mine water as cooling water is a productive use of water that is not suitable for drinking based on the current levels of contaminants. (Ex. 4, at 8).

3. Overflow of Mine Water/Effect on Groundwater.

Mr. Dailey indicated water in the Austinville Mine would not migrate into the groundwater aquifers once Duke Energy Wythe begins withdrawing water. Once pumping begins, the level of water in the mine will drop and water will flow into the mine, not out of it. The direction of water flow is determined by the hydraulic head, which is determined by the elevation, velocity, and pressure of the water. In nature, the hydraulic head is a function of elevation – water flows

[15] Defined by the DEQ as the lowest flow averaged over a period of seven consecutive days that can be statistically expected to occur once every ten climatic years. (9 VAC 25-260-140 Criteria for Surface Water).

[16] Even assuming the three closed bulkhead doors were actually open, the maximum recharge water from the New River into the mine would be 1.9 cfs, or .09 % of the river's average flow. (Tr. at 611).

downhill under the force of gravity. Water will always flow from an area of higher hydraulic head to one of lower hydraulic head. In response to the lowered elevation of the water in the mine, groundwater located above the water table in the mine will recharge the mine through faults, cracks and fissures. (Ex. 4, at 11-12).

Mr. Dailey clarified that with no pumping, water from the mine will migrate to the New River during greater than normal rainfall conditions when groundwater levels will rise, thus causing water levels in the mine to rise. Eventually, the water in the mine rises high enough to overflow into the New River. This occurs when the water level in the mine is higher than the floor surface of the Second Level of the mine, which is 30 feet above the New River. At that point, the water flows slightly downhill through trenches and pipes and out of the mine through an adit (an almost horizontal opening into the mine that was installed by the predecessor to New Jersey Zinc) to the New River. During New Jersey Zinc's operations, the water pumped from the mine was discharged through this route, which was outfall 003 of New Jersey Zinc's Virginia Pollutant Discharge Elimination System ("VPDES") permit. After New Jersey Zinc stopped pumping in December 1981, subsequent permit holders, James River Limestone and Austinville Limestone, have been required to observe and report flows from the adit to the DEQ as a condition of the permit. (Ex. 4, at 6-7).

Mr. Dailey's review of the records indicates groundwater refilled the empty Austinville Mine and first overflowed in April 1983, 15 months after the mine was closed. In the 20½ years of records, these types of overflows were recorded 21 times, or in 21 of the 246 months (9%). The most frequent recordings were six continuous months in 1996. Less frequent flows occurred during a 46-month period from June 1983 to March 1987, and the current drought. The last overflow was recorded in June 1998, 48 months ago. When Duke Energy Wythe begins pumping, the groundwater table of the mine will go down until there is equilibrium between the water being withdrawn and the water being recharged, at around 1750 feet. The overflow at the adit is at 1970 feet, so the water would have to rise 220 feet in order to overflow. It would take approximately 10 months of no pumping before water could rise up to the adit. (Ex. 4, at 7; Tr. at 416-17, 617).

Mr. Dailey testified there is no engineering reason that would prohibit sealing the second-level adit, but there is likewise no engineering reason that would require the sealing of the adit. Mr. Dailey stated it is preferable to leave the adit open as a control point. If the adit is left open, when the groundwater rises it will exit the mine at this known point and it will be easier to track and sample the water. If the adit were closed, any overflow from the mine would continue rising and exit through a second, higher opening, which is not a permitted outfall and the water would not be sampled and tested. (Tr. at 617-19).

As to the formation of sinkholes, because of the karst topography, Mr. Dailey indicated this region of Southwest Virginia is susceptible to sinkhole development. Carbonate rock underlies the area and is susceptible to dissolution when immersed in groundwater. This dissolution results in the fissures, sinkholes and underground caverns characteristic of karst topography. Thus, there is a likelihood of sinkhole formation in this area of Southwest Virginia with or without the Facility's withdrawal of water from the Austinville Mine. When the mine was operational, sinkholes did form in the area. However, the sinkholes caused by mining were primarily related to the ore and rock removal which caused structural weaknesses. (Ex. 4, at 10-11; Tr. at 377-78).

Mr. Dailey testified that drawdown of the water in the Austinville Mine might increase the potential for sinkhole development relative to the mined-out area. Based on the groundwater area of influence study (Ex. 4, Attachment AD-R-6), which suggests the depression of the groundwater table from mine pumping will have steep gradients, the potential increased likelihood of sinkhole development will be in the vicinity of the mine works. The groundwater table will not be greatly depressed outside the area of existing mine works. Therefore, the areas of increased likelihood of subsidence and sinks will be in the groundwater area of influence. (Ex. 4, at 10-11).

Mr. Dailey testified the groundwater area of influence will cover approximately 1500 acres and be co-located with the existing underground Austinville Mine works. (Ex. 4, at 9, Attachment AD-R-5). The area of lowered groundwater lies under the Austinville Limestone property, the area of Austinville known as New Town (formerly housing for New Jersey Zinc mine employees), further to the northeast in the Fisher Fields and Brown Ore Body areas of the mine, and minor effects at Ivanhoe. Outside the zone of influence there will be no effect on the groundwater levels due to Duke Energy Wythe's pumping. Levels outside the area will rise and fall with rainfall and drought as they always have done. (Ex. 4, at 9).

In any event, Mr. Dailey indicated the impact from Duke Energy Wythe's withdrawal of water from the Austinville Mine will be less than the impacts associated with New Jersey Zinc's dewatering of the mine due to the fact that the Company, on average, will be withdrawing approximately one-fourth the quantity of water withdrawn by New Jersey Zinc. Furthermore, the Facility's withdrawal of water from the mine will have no impact on the groundwater at the State Park, which is outside the area of influence by more than a mile. (Ex. 4, at 9).

4. Effect of Discharge Water on Mine Water Quality.

In order to address concerns about any effects of heated discharge water from the Facility on the Austinville Mine water, Mr. Dailey emphasized that once pumping of the mine water resumes, the level of water in the mine will drop and water will flow into the mine from the surrounding groundwater and the New River, not out of the mine. (Ex. 4, at 11-12; Tr. at 367-68, 372). Assuming that mine water could flow into the New River during pumping, however, Duke Energy Wythe performed a heat balance calculation to determine the effect of the heated discharge water on the temperature of the stored mine water and thus the temperature of water that could flow into the river. Duke Energy Wythe's study indicates that over a period of 30 years of returning discharge water to the mine water, the water temperature in the mine will rise only 2.2 degrees Fahrenheit from 53º F to 55.2º F. At either temperature, any mine water that flows into the river is unlikely to heat the river except during the winter. The added heat has a minimal effect due to the tremendous volume of stored water in the mine with which the discharge water will mix, and the large rock/water surface area that will absorb the heat. The study conservatively assumed that all of the heat in the discharge water is retained in the mine and there is no loss to the outside. (Ex. 4, at 12, Attachment AD-R-7).

Mr. Dailey also indicated the levels of lead and zinc currently present in the Austinville Mine water are artificially high because the mine has been full of water since 1983, giving the metals present in the mine time to leach into the stagnant water. When Duke Energy Wythe begins

pumping, causing recharge of the mine water, the levels of contaminants should actually decrease. (Tr. at 630-33).

Testimony and Evidence of Staff

The Staff presented the testimony of Gregory L. Abbott, utilities analyst in the Commission's Division of Energy Regulation; Farris M. Maddox, principal financial analyst in the Commission's Division of Economics and Finance; and Mark K. Carsley, principal research analyst in the Commission's Division of Economics and Finance. The Staff also sponsored the testimony of Allen Newman, water permit manager in the Southwest Regional Office of DEQ; Terry David Wagner, director of the Office of Water Resources Management for the DEQ; and Charles L. Turner, director of the Office of Air Permit Programs for the DEQ.

A. Mr. Maddox.

In his prefiled direct testimony, Mr. Maddox discussed Duke Energy Wythe's corporate and affiliate relationships, and the ability of Duke Energy Wythe to fund the Facility. Mr. Maddox noted that Duke Energy Wythe is a wholly owned subsidiary of DENA, which is in turn a wholly owned subsidiary of Duke Capital Corporation ("Duke Capital"). Duke Capital itself is a wholly owned subsidiary of Duke Energy ("Duke Energy"). By virtue of its affiliation with Duke Energy and Duke Capital, Duke Energy Wythe should be able to obtain the necessary funds to build and operate the Facility. Duke Capital, which has unsecured debt ratings of A3 and A from Moody's and S&P, would be the likely conduit of capital support for Duke Energy Wythe. Duke Capital's net income for 2001 was $1.4 billion, and it has the ability to borrow up to $3.6 billion. Duke Energy Wythe's access to capital is also sufficient to allow it to reimburse Wythe County for the construction of the water intake and emission pipelines, and to pay for the usage of those lines. (Ex. 16, at 3-5).

No portion of the cost of the Facility will be included in the rate base of any regulated utility whose rates are established pursuant to Chapter 10 of Title 56 of the Virginia Code, and Mr. Maddox testified that the Facility will have no adverse impact on the rates of other Virginia regulated utilities. The supply of natural gas and the pipeline to supply it will be FERC-jurisdictional; Duke Energy Wythe will pay for interconnection costs to AEP's system and the water pipelines. As to the construction of the Patriot Extension, Mr. Maddox noted that because the Facility will rely on natural gas to be supplied by the Patriot Extension, if that pipeline is not approved by FERC, it is doubtful that Duke Energy Wythe will spend significant capital amounts on construction while awaiting approval of the pipeline. However, FERC preliminarily found the benefits of the Patriot Extension would outweigh any adverse impacts, pending completion of the environmental review. *See*, Preliminary Determination on Non-Environmental Issues, FERC Docket No. CP01-415-000. Further, FERC also found the proposed location of the pipeline was justified, and ordered that its construction be completed within one year of the date of any final order in the proceeding. (Ex. 16, at 6). Although it is possible that alteration of the Patriot Extension route could necessitate additional time and expense to build a connecting supply line to a relocated pipeline, it is unlikely that the proposed location of the Patriot Extension will be altered given FERC's order. (*Id.*).

Mr. Maddox also indicated it would be appropriate to include a "sunset" provision in any certificate issued by the Commission, requiring construction of the Facility to commence within two years of the date the Commission grants the certificate. (*Id*.).

B. Mr. Carsley.

Mr. Carsley filed direct testimony and also testified at the June 26 hearing concerning the economic benefits of the construction and operation of the Facility and its impact on economic competition in electric power markets in Virginia. During construction, Duke Energy Wythe expects that 400 construction workers will be employed for 11 months, at an average annual salary of $48,500. Total pre-tax wages for construction workers will amount to around $17,000,000. Duke Energy Wythe estimates that 80% to 90% of the construction workers will be hired from Wythe County and/or other regions within Virginia. Using an estimate prepared by the JIDA, Duke Energy Wythe determined that the addition of the $250 million Facility to the tax base of Wythe County would generate $1,325,000 in annual property tax revenues for Wythe County. The property and income taxes will provide recurring benefits over the life of the Facility. (Ex. 15, at 2-3).

Mr. Carsley noted that, according to Duke Energy Wythe, during the construction phase, the Facility may generate as much as $2 million in machinery and equipment sales taxes and $50,000 in contractors' use taxes. Duke Energy Wythe estimates that $445,000 of the machinery and equipment sales taxes will be apportioned to Wythe County. Although the economic benefits resulting from construction will be large but short-lived, the economic benefits resulting from operation of the Facility will be long-term, accruing over the life of the Facility. (Ex. 15, at 3).

Mr. Carsley also noted neither Wythe County nor the Commonwealth has made any present or future financial or other concessions to Duke Energy Wythe, and Wythe County should incur no incremental costs in providing water service to Duke Energy Wythe. Although Wythe County will install the water pipelines between the Austinville Mine and the Facility site, Duke Energy Wythe will reimburse Wythe County for any capital costs incurred during installation. Operating costs related to the provision of water service by the County will be recovered by rates paid by Duke Energy Wythe to Wythe County. (Ex. 15, at 4-5). Mr. Carsley noted that if a more comprehensive economic impact study on the impact of the Facility were done, there would be multipliers applied to the economic activities generated by the Facility. This would increase the economic benefits indicated by Mr. Carsley in his prefiled testimony, because the direct benefits of the Facility, such as the increased tax base and the creation of jobs, did not account for the indirect or induced benefits of the Facility. (Tr. at 606-07).

Mr. Carsley testified the Wythe County Board of Supervisors passed a resolution supporting the Facility, as did the JIDA. (Ex. 15, at 4). The addition of 620 MW of generating capacity not controlled by the incumbent utility will be a positive development for a wholesale competitive power market in Virginia. In sum, Mr. Carsley stated the Facility appears to have positive net benefits for Wythe County and Virginia, and the Facility appears to be reasonable and in the public interest. Staff does not oppose the Facility. (Ex. 15, at 4-6).

C. Mr. Abbott.

Mr. Abbott filed direct testimony and testified at the June 26 hearing concerning the effect of the Facility on the reliability of AEP's transmission system and the Facility's water supply arrangements. The Facility site adjoins the site of the AEP 765 kV Jackson's Ferry Substation to which the Facility will be connected. The results of the studies completed by AEP show the AEP system can satisfactorily accommodate the plant interconnection. The facilities study determines the necessary facilities and cost estimates to integrate the Facility into the AEP network. Duke Energy Wythe will pay for all costs associated with the interconnection. The Facility should not impact AEP's system reliability.[17] (Ex. 14, at 2-4).

Mr. Abbott testified it appears the Austinville Mine has ample capacity to serve the Facility's water needs. Duke Energy Wythe intends to purchase the mine, which will act as a vast underground water storage reservoir. As to fuel supply, Mr. Abbott noted that natural gas for the Facility will be delivered by the Patriot Extension, which will traverse the plant site. Duke Energy Wythe will construct and operate a 20-inch gas pipeline approximately 250 feet long between the meter station and the Facility. ETNG will provide firm transportation service. The estimated daily quantity of gas that will be consumed during normal operating conditions is 110,380 MMBtu/day (118,500 MMBtu/day during maximum operating conditions). (Ex. 14, at 4-5).

Mr. Abbott indicated Duke Energy Wythe plans to acquire the Austinville Mine property, which is currently being used by Austinville Limestone for the recovery of lime from limestone taken out of the mine over the many years of operation as a lead/zinc mine. The lime operation is conducted above-ground, and should not interfere with Duke Energy Wythe's plans to withdraw water from the mine. The lime operations should continue after Duke Energy Wythe purchases the property. (Ex. 14, at 9). In sum, Mr. Abbott testified Staff believes the Facility meets the criteria delineated in Va. Code § 56-580 D and Staff does not oppose the request for a CPCN. (Ex. 14, at 12).

Mr. Abbot testified that DEQ did not require the project to receive a water withdrawal permit or a wastewater discharge permit because it is utilizing the Austinville Mine as its water source. This falls under the jurisdiction of the EPA, and the EPA's Underground Injection Control ("UIC") program. Mr. Abbott stated that the EPA determined that the project is not required to obtain a UIC program permit. (Ex. 14, at 6).

D. Mr. Turner.

Mr. Turner testified at the June 26 hearing. Mr. Turner indicated that the Company conducted both PSD cumulative multi-source modeling and a Tenaska-styled Cumulative Impact Analysis. Mr. Turner noted the Cumulative Impact Analysis was a reasonable method to identify the cumulative impacts of the Facility and the other 23 proposed electric generating facilities, and the DEQ still maintains that the initial PSD analysis adequately addresses the cumulative impact issues. (Tr. at 558).

[17] Transmission facilities to connect the Facility to the AEP substation are the subject of a pending application for Commission approval in Case No. PUE-2002-00182.

Mr. Turner also described the designed ozone value that was used to represent background ambient ozone levels as being "the worst-case numeric value from what [DEQ considers] a representative ozone monitor. In this case it's Wythe County [and it is] pretty clear that would be representative." (Tr. at 573). Thus, DEQ determined the Facility is definitely below the NAAQS for ozone, in terms of impact on the one-hour ozone standard. Likewise, based on the cumulative impact analysis, the cumulative impact is below the NAAQS and the PSD increments for all criteria pollutants. (Tr. at 572-74). Mr. Turner noted a selective catalytic reduction ("SCR") system will be installed to further reduce NO_x emissions from each combined combustion turbine/heat recovery steam generator stack to 2.5 parts per million by volume (dry basis) at 15% oxygen while firing natural gas, which has been determined by DEQ to be BACT for controlling NO_x from these units. (Tr. at 581-82; Attachment A to Duke Energy Wythe Post-Hearing Brief).

Mr. Turner also testified as to the NO_x SIP Call, indicating that the program itself establishes a state-wide cap on emissions, and that each existing source has been provided an allocation. There is a set-aside of 855 tons to cover all new facilities in Virginia. Each facility receives an allocation and is expected to operate within that allocation. If a source is able to install controls such that they can operate below their allocation, that source can trade its extra allowances to other sources. Mr. Turner testified the NO_x SIP Call and the cap placed on NO_x emissions, is the remedy for reducing NO_x emissions and ozone formation to reach attainment under either the one-hour or the eight-hour ozone standard. (Tr. at 559-61, 575-76).

As to the Facility's emissions of HAPs, Mr. Turner indicated that zinc is not currently a HAP under DEQ regulations or the CAA. However, if zinc or other emissions from the Facility or other sources were determined to pose a public health threat, DEQ could take action or impose limits to protect the public. DEQ also looked at lead emissions from the Facility and concluded that the Facility's worst-case lead emissions will be well within EPA and DEQ standards designed to protect public health, and so there is no need for a limit on those emissions. (Tr. at 562-64, 570-71).

Mr. Turner also testified that the PSD program requires applicants for a PSD permit to include in the application an analysis of existing air quality data in the area to be affected by the project. The determination of existing air quality may be satisfied by air measurements from either a state-operated or private network, or by a pre-construction, on-site monitoring program. The pre-construction, on-site monitoring program requirement may be waived if a project would cause an impact less than EPA-specified de minimis monitoring levels or if existing data are representative of the air quality in the site vicinity. (Tr. at 566-67). Mr. Turner has "determined that there is . . . sufficient representative data that the pre-construction permit monitoring does not have to occur for this application." (Tr. at 566). Likewise, "a post-construction monitoring requirement would be a part of the [air] permit" and, for a facility like the proposed Facility, would not normally be required. (Tr. at 567).

E. Mr. Newman.

Mr. Newman testified at the June 25 hearing that as part of DEQ's review of the water issues, he met with Duke Energy Wythe in the fall of 2001 prior to its submittal of the UIC application to EPA. Under the UIC permit Duke Energy Wythe is required to conduct quarterly monitoring of metals concentrations and submit a report to EPA. DEQ expects to receive an annual

report summarizing the quarterly data and outlining any trends developing in the mine. Mr. Newman indicated that even though DEQ does not issue a permit for the discharge, it takes an interest in monitoring the water quality. Mr. Newman also indicated that Duke Energy Wythe's proposed water treatment for metals is the typical treatment process to remove metals from water. (Tr. at 458-63).

F. Mr. Wagner.

Mr. Wagner testified at the June 25 hearing as to minimum instream flow on the New River. He indicated that "minimum instream flow" refers to flow conditions set based on the minimum flows necessary to sustain aquatic life. If the New River dropped below the minimum instream flow, aquatic resources would be negatively impacted. He further indicated that to his knowledge, there is no water management plan in place for the New River, nor has a cumulative impact study been done on water withdrawals from the New River. Mr. Wagner agreed that the rule authorization issued to Duke Energy Wythe by EPA is concerned with potential impacts on drinking water. (Tr. at 464-67).

DISCUSSION

The Commission uses six criteria to evaluate applications to construct electric generating facilities.[18] The criteria are: (1) reliability;[19] (2) competition;[20] (3) rates;[21] (4) environment;[22] (5) economic development;[23] and (6) public interest.[24] These criteria will be applied to the evidentiary record herein.

There is considerable local opposition to the Facility, and the public witnesses raised a number of issues that may require additional hearings to fully develop the record. Specifically, there are some issues of first impression for the Commission's consideration that require further analysis. The areas of greatest concern are: (1) the Company's proposal to use the Austinville Mine as a source of cooling water for the Facility's gas turbines; (2) the Company's decision to use wet-cooling technology over other forms of gas turbine cooling technology; and (3) the economic impact of the Facility on the recreational tourism industry that is centered around the Foster Falls State Park and the New River.

The Company's proposal to use the Austinville Mine as a water source has drawn considerable public opposition. This is apparently the first time in the United States that an electric power generator has proposed to use an abandoned mine as a source for cooling water. The Company's proposal to use the mine as a water source is complicated by the fact that the water in

[18] *See, e.g., Application of Tenaska Virginia Partners, L.P.*, Case No. PUE-2001-00039, Final Order (April 19, 2002).
[19] Va. Code Ann. §§ 56-580 D(i) and 56-46.1 A.
[20] Va. Code Ann. § 56-596 A.
[21] Va. Code Ann. § 56-580 D(ii).
[22] Va. Code Ann. §§ 56-580 D and 56-46.1 A.
[23] Va. Code Ann. §§ 56-46.1 and 56-596 A.
[24] Va. Code Ann. § 56-580 D(ii).

the mine is contaminated with excessive levels of lead, zinc, and cadmium.[25] No state or federal agency regulates the removal of the water from the mine. However, the EPA regulates the underground injection of the Facility's cooling tower effluent into the Austinville Mine.[26]

The public witnesses argue the Company's use of the Austinville Mine as a source for cooling water needs further study. They argue the mine is hydrologically connected to the New River and the underground aquifer, and the Facility's use of 4 to 7 MGD and its impact on the river and the aquifer has not been fully studied. The Company, on the other hand, argues that it will use less water per day than the New Jersey Zinc Company pumped out of the mine every day to conduct its mining operations. The Company, therefore, believes its operations should have a minimal impact on the New River and the underground aquifer.

There are three distinct sub-issues related to the Company's choice of water supply. First, will the Austinville Mine support the Company's daily water needs? Second, what will be the impact of the Company's water withdrawals and effluent injections on the structural integrity of the Austinville Mine? Finally, what will be the impact of the Company's choice of water supply on the New River and the underground aquifer?

Duke Energy Wythe argues in the closing days of the New Jersey Zinc Company's operation of the Austinville Mine, the mining company pumped approximately 12 MGD from the mine to keep it dry for mining operations. Since Duke Energy Wythe proposes to use only 4 to 7 MGD, the Company believes the mine will have sufficient re-charge to meet its water needs. My concern with this assumption is the mine is now full of water that is exerting an opposite force on the water trying to enter into the mine. Expressed another way, as the mine filled with water, the rate of inflow slowed until equilibrium was reached. If water were still infiltrating the mine at the rate of 12 MGD, the level of the water in the mine would remain constant after Duke Energy Wythe commences operations. However, Company witness Dailey testified the water in the mine would be drawn down approximately 200 feet before equilibrium is reached again. To me, this means the water is flowing into the mine at some rate less than 12 MGD. Moreover, the actual rate and whether this rate can be sustained to meet the Facility's long-term need for water are two unknown factors.

Mr. Dailey's water supply study included an estimated mine recharge graph in his report, but actual pump testing was not conducted as part of the application process.[27] There are at least three closed bulkhead doors in the mine. These doors were closed to keep water out of the mine. The doors are either performing their intended function, or they leak like Niagara Falls.[28] The

[25] The water in the Austinville Mine has been stagnating for the past 20 years, except for the horizontal movement of water through the underground aquifer. The prolonged exposure of the water to the ore-bearing rock in the mine has increased its concentrations of lead, zinc, and cadmium.

[26] EPA initially issued a letter authorizing the underground injection of the Facility's effluent into the Austinville Mine. *See*, Ex. 8, Attachment PL-R-5. However, NCNR has filed a Petition with the EPA requesting that the EPA suspend and reconsider its rule authorization in accordance with the provisions of 40 C.F.R. 144.12(a), (c), and (d), and upon finding that such rule authorization was granted in violation of EPA regulations, revoke the rule authorization, and require an individual Underground Injection Control ("UIC") permit and aquifer exemption, if qualified, pursuant to 40 C.F.R. 144 *et seq*. for the proposed operations.

[27] *See*, Ex. 4, Attachment AD-R-3 at 16.

[28] *See*, Ex. 4, Attachment AD-R-3 at 21.

bulkhead door on the 4th Level leading to Chiswell's Hole was closed to stem water flowing into the mine along a fault line from the New River. During shutdown, at least two other bulkhead doors were apparently closed to keep water out of the mine to buy more time to remove equipment from the mine. Based on interviews with former mine employees, Mr. Dailey believes these doors are located on the 11th Level and the 7th Level.[29] These doors will impede the flow of water to the Van Mater shaft, where the Company now proposes to pump its cooling water out of the mine. At a minimum, underwater robotic testing should be done to confirm the status of the bulkhead doors in the mine. Additionally, if one or more doors are closed, pumping simulations should be performed, with dye testing, to confirm the free flow of water throughout the mine. Finally, an independent second expert opinion would be in order to confirm the feasibility of the company's proposal.

The record is unclear whether EPA considered the impact of the water withdrawals and heated effluent injections on the structural integrity of the Austinville Mine as part of its UIC approval. EPA's analysis appears to be limited to a review of the concentrations of heavy metals in the mine.[30] Mr. Dailey testified the water velocity in the mine when pumping commences should be approximately 0.10 fps. He indicated that as long as the water flow is less than 10 fps there should be no scouring of the mine walls or the pillars supporting the mine roof. This is another area where the Staff should retain its own expert to independently confirm that the Company's engineering representations are in fact reliable.

The underground movement of water through the area's karst rock dissolves the limestone and creates voids in the rock. When the void's ceiling can no longer support the weight from above, it collapses creating a sinkhole. In his report, Mr. Dailey initially recommended withdrawing the cooling water from the Brown Ore Body shaft and injecting the effluent at the Van Mater shaft or at Bore Hole A-204, which is west of the Van Mater shaft. The Company now proposes to withdraw water from the Van Mater shaft and it is unclear in the record where the Company now intends to inject the cooling tower effluent. These changes highlight the fact that the impact of water movement throughout the Austinville Mine needs further study. During the 30 years the Facility will be in operation, will the accelerated movement of water within the Austinville Mine create the area's largest sinkhole, or accelerate the development of sinkholes in the area surrounding the mine?

Duke Energy Wythe's reliance on New Jersey Zinc Company's operations as support for its use of the mine as a water source may be misplaced. New Jersey Zinc Company pumped the water from the Austinville Mine directly into the New River where it was then available to re-charge the groundwater aquifer through fissures in the river bottom and to support other beneficial uses of the river. Duke Energy Wythe proposes to pump the water out of the mine and use it for cooling, returning only 10% of the water to the mine. The effects of the long-term water withdrawals from the New River and the groundwater aquifer have not been studied. Duke Energy Wythe argues that it is making valuable use of an impaired resource that would otherwise go unused. The fallacy with this argument is that between six months and one year after commencing operations, the Facility will use up all of the water currently stored in the Austinville Mine. For the next 29 years after that, the Facility will be taking between 4 and 7 MGD from the New River and the groundwater aquifer.

[29] The mine levels are based on their depth below ground level. For example, the 11th level is 1,100 feet below ground level.
[30] *See*, Ex. 8, Attachment PL-R-5.

The water in the mine is made up of water from the New River (10-17%) and groundwater from the aquifer (83-90%). In the 20 years since the Austinville Mine ceased operations, additional demands have been placed on water from the New River and the underground aquifer for drinking water for communities in the region. When the EPA did its review of the Austinville Mine site as a possible Superfund site, it noted that there were approximately one thousand homes within a three-mile radius of the mine site that use the underground aquifer as a drinking water source. Additionally, numerous localities downstream from the Facility are looking to the New River as a source of drinking water. There is currently no comprehensive water management plan in place for the New River. The impact of the Company's water use on these water users has not been adequately reviewed.

There was no independent analysis of the feasibility of the Company's proposals or the long-term effects of the Company's water use on the New River and the underground aquifer.[31] The Company has stated generally that if its operations cause someone's well to go dry, it will replace that well, or make other arrangements or compensation. I find this proposal to be ill-defined. Further, it places the burden on the homeowner to prove that Duke Energy Wythe's operations caused the homeowner's well to go dry. Because of the number of uncertainties related to the Company's proposal to use the Austinville Mine as a water source, the Commission should direct the Staff to retain sufficient qualified experts to further study the Company's proposal.

Given the uncertainties surrounding the Company's water supply, the Staff should study alternatives for the Facility's gas turbine cooling needs, other than the water intensive wet-cooling option the Company proposed. This leads to the second issue requiring further study. Specifically, the Staff should explore alternative forms of cooling the Facility's gas turbines such as single pass wet-cooling, or dry-cooling. Single pass wet-cooling is similar to the cooling system used at Virginia Power's North Anna facility. Is it possible for Duke Energy Wythe to use the Austinville Mine in a fashion similar to Virginia Power's use of Lake Anna? With single pass wet-cooling, water is removed from a source body, used once for cooling, and returned to the source body at a different location at a slightly elevated temperature. With this process, almost all of the water, except for slight system losses, is returned to the source body. Is it possible for the Company to withdraw water from the Van Mater Shaft, use it once for cooling, and return the water to the Brown Ore Body Shaft for cooling? In effect, the mine would operate as a large underground radiator. Company witness Dailey calculated the temperature change of the mine water based on returning one million gallons of 92.7º F heated effluent per day to the mine.[32] Mr. Dailey calculated that over the thirty-year life of the Facility the water temperature in the mine would increase from 53º to 55.2º F. Considering that the single pass cooling water would be used only once, and not recycled five times, its temperature leaving the Facility should be lower than 92.7º. There are distinct advantages to using single pass wet-cooling technology: (1) the electric generating facility costs less to build; (2) it produces electricity more efficiently; and (3) it does not emit a visible vapor plume.[33]

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[31] *See*, Ex. 14, at 4-5.

[32] For comparison purposes, the water coming out of an average residential electric hot water heater is 120º F, or approximately 27.3º F hotter than the Facility's effluent. *See e.g.*, Specifications for the A.O. Smith Promax Residential Electric Hot Water Heater, which may be found at www.hotwater.com.

[33] *See*, Burns, J.M. and W.C. Micheletti, November 2000. *Comparison of Wet and Dry Cooling Systems for Combined Cycle Power Plants*. Version 2.1. Submitted as Appendix F to the comments of the Utility Water Act Group on EPA's Proposed Section 316(b) Rule for New Facilities.

Alternatively, the Staff should explore the costs and benefits of using dry-cooling technology. The Company initially proposed to withdraw water directly from the New River. When this option proved unfeasible, it considered using dry-cooling technology. After it had secured the Austinville Mine as a water source, the Company reverted to its initial wet-cooling proposal. The Company rejected the use of dry-cooling because of: (1) the availability of a water source; (2) the adverse environmental impacts associated with dry-cooling; and (3) economic considerations. As previously stated, the Austinville Mine may or may not be a viable water source for the Facility.

A great deal of public opposition to the Facility related to its selection of the Austinville Mine as a water source and the Facility's water use, concerns which are directly related to the Company's choice of cooling technology. A number of citizens testified the Commission should require the use of dry-cooled technology similar to that proposed by CPV for its facility in neighboring Smyth County. The record in this proceeding of the costs and benefits of dry-cooling technology has not been fully developed. There are a number of questions that need to be answered. For example, Duke Energy Wythe argues that it would still need to develop the Austinville Mine as a water source even if the Facility were dry-cooled. This may not necessarily be true. Wythe County is developing a municipal water system to serve Austinville and neighboring Carroll County. The municipal water system could serve the Facility's nominal dry-cooled water needs. Are the adverse environmental impacts, increased noise pollution and air emissions, outweighed by the environmental benefits of dry-cooling, decreased water use, and elimination of the Facility's visible vapor plume? The economic costs of the dry-cooling option must be examined further. In this record, the cost estimates to install such technology on a gas-fired combined-cycle generating facility vary widely. Both the Company and the public witnesses rely on the same EPA technical report to support their respective positions.[34] This report indicates that it may cost anywhere from $15 million to $30 million to dry-cool the Facility. Additionally, the energy penalty for using dry-cooling, or the decrease in the Facility's operating efficiency, varies widely. Dry-cooling a combined-cycle power plant may decrease its efficiency by 1.86 MW, or it may decrease its efficiency by 25 MW. It will take additional analysis by the Staff and its consultant to determine the true environmental impacts and economic costs of requiring the use of dry-cooling at the Facility.

Finally, the economic impact of the Facility must be further examined, particularly as it relates to the recreational tourism industry centered around the Foster Falls State Park and the New River. The analyses of the economic impact focused solely on the Facility's economic benefits and completely ignored its economic costs. The Commonwealth has spent millions of dollars over the years upgrading the State Park. These expenditures have apparently begun to pay dividends as growth in tourism in the region exceeds the state average. The State Park accounts for approximately $17.5 million in revenue to the local economy. The Company believes its operations will have no impact on the State Park. Two public witnesses whose livelihoods depend on the recreational tourist business believe otherwise. A complete picture of the Facility's economic impact on the local and state economy is lacking in this case. If tourism at the State Park declines after the Facility is built, what impact will this have on the local and state economy? As with economic benefits, the economic costs may ripple across the economy. Fewer visitors to the State Park may mean less business for the restaurants in Wythe County, fewer room nights in the area's

[34] *See*, Ex. 8, Attachment PL-R-16.

hotels, and reduced sales by area merchants. This not only affects the local economy, but also state tax revenue. The Commission needs to have the complete picture of the Facility's economic impact before reaching a decision in this case. For this reason, the Commission should direct the Staff to perform a comprehensive economic analysis of the Facility.

Issues Raised by Public Witnesses

A. Air Emissions.

The Facility's air emissions will be regulated by a "Prevention of Significant Deterioration ("PSD") Permit, Stationary Source Permit to Construct and Operate" that will be issued by DEQ.[35] Pursuant to Va. Code Ann. § 56-580 D, the Commission must accept that permit as it relates to the Facility's air emissions that "are governed by the permit or approval, or are within the authority of, and were considered by, the governmental entity in issuing such permit or approval. . . ."[36] There are, however, several issues that fall into the "no man's land" created by Section 56-580 D. It is not clear from the record whether certain issues raised by the public witnesses were considered as part of a permitting or review process. This Report will identify the issues that are clearly within the ambit of the PSD permit, and those issues where it is unclear whether they were considered by DEQ or another state agency.

[35] On July 16, 2002, DEQ sent the Company a draft PSD Permit for review. According to the draft permit, DEQ solicited written public comments to the permit by placing an advertisement in the *Wytheville Enterprise* in August 2002. A public hearing was scheduled for October 2002, to receive citizen comment on the permit. *See*, Ex. 23.

[36] The amendment to Va. Code Ann. § 56-580 D provides:

> In order to avoid duplication of governmental activities, any valid permit or approval required for an electric generating plant and associated facilities issued or granted by a federal, state or local governmental entity charged by law with responsibility for issuing permits or approvals regulating environmental impact and mitigation of adverse environmental impact or for other specific public interest issues such as building codes, transportation plans, and public safety, whether such permit or approval is prior to or after the Commission's decision, shall be deemed to satisfy the requirements of this section with respect to all matters that (i) are governed by the permit or approval or (ii) are within the authority of, and were considered by, the governmental entity in issuing such permit or approval, and the Commission shall impose no additional conditions with respect to such matters. Nothing in this section shall affect the ability of the Commission to keep the record of a case open. Nothing in this section shall affect any right to appeal such permits or approvals in accordance with applicable law. In the case of a proposed facility located in a region that was designated as of July 1, 2001, as serious nonattainment for the one-hour ozone standard as set forth in the federal Clean Air Act, the Commission shall not issue a decision approving such proposed facility that is conditioned upon issuance of any environmental permit or approval.

1. Exceedance of the Significant Impact Levels (SILs) for SO_2, NO_x, and PM_{10} triggering multisource PSD modeling.

When the Company conducted its emissions modeling for the Facility, the Facility modeled above the SIL for SO_2, NO_x, and PM_{10}. Under DEQ's PSD program, this triggered a requirement that the Company conduct additional cumulative multi-source emissions modeling for the Facility. Company witness Collins testified the exceedance of the SIL trigger was most likely the result of the complex terrain in the area and the ultra-conservative assumptions in the screening model. The additional modeling showed that the Facility would not cause or contribute to an exceedance of the PSD increments or the NAAQS for SO_2, NO_x, and PM_{10}. Mr. Collins further testified that DEQ reviewed the results of the PSD cumulative multi-source modeling and determined that the Facility would neither cause nor contribute to a violation of any PSD increment or NAAQS.

2. Cumulative air emissions of the Facility and other new and proposed electric generating facilities.

The current air quality in Wythe County and surrounding counties is good and in attainment with all NAAQS. The Company conducted a Cumulative Impact Analysis to determine the total impact of the Facility and the other 22 proposed electric generating facilities on air quality in the area. DEQ found the Company's analysis to be reasonable.[37] The incremental impacts of the Facility were compared to the single-source SILs. Although the Facility's highest modeled concentrations of NO_x and PM_{10} exceeded the SILs, the Cumulative Impact Analysis, which considers both existing and proposed sources, demonstrated that the Facility's impact on NO_x and PM_{10} concentrations was below both the PSD increments and the NAAQS. The combined effect of all 23 generating facilities was next compared to the PSD increment for each criteria pollutant. The combined impacts of the 23 existing or proposed facilities were below the allowable PSD increments in all cases, and in some cases were below the single source SILs.

3. Effect of terrain on the Facility's air emissions.

The complex terrain surrounding the Facility was taken into account in the Facility's single source and cumulative impact air quality modeling. The results of this modeling indicate the Facility's operations will not cause an exceedance of any PSD increment or NAAQS. [38]

4. Wet-condenser cooling technology and ground fog at Jackson Elementary School and the area surrounding the Facility.

One public witness, a professional engineer, expressed concern that, under certain atmospheric conditions, the Facility's wet-cooling tower may induce ground fog at the Jackson Elementary School and the area surrounding the Facility. He believes the ground fog may represent a safety hazard for children traveling to the school and individuals traveling to the State Park. It is not clear from the record whether DEQ or VDOT addressed these safety concerns as part of their review of the Company's application.

[37] *See*, Exhibit 11, Attachment WC-R-4.
[38] *See*, Ex.11, Attachments WC-R-1 at p. 3-14, and WC-R-4 at p. 2-1.

In response to these concerns, the Company asked its environmental consultant for an opinion on the Facility's cooling tower-induced ground level fogging. The consultant opined that he did not expect fogging to occur beyond 3 kilometers from the cooling tower location. Since the Jackson Elementary School is 3.23 kilometers from the Facility, the Company believes it will have no impact on the school. The Company did not specifically address cooling tower-induced ground level fogging occurring in the area of the road leading into the State Park, which lies within the 3-kilometer radius. The Company, however, stated that it would address ground level fogging through its Integrated Contingency Plan.

The Commission should contact VDOT and DEQ to determine whether those agencies considered the safety concerns associated with the Facility's cooling tower-induced ground level fogging. If they have not, the Commission should review the Company's procedures in its Integrated Contingency Plan that address cooling tower-induced ground level fogging prior to granting any CPCN.

5. The Facility's lead emissions.

The Facility has two sources of lead emissions, the combustion turbines and the cooling towers. The lead from the combustion turbines would come from the natural gas used for fuel, and the lead from the cooling towers would come from the lead-tainted mine water used for cooling. DEQ's draft PSD permit places no limitations on the Facility's emissions of lead from its gas turbines.[39] DEQ looked at the Facility's lead emissions from its gas turbines and concluded the Facility's worst-case lead emissions would be well within DEQ and EPA standards designed to protect public health. Therefore, DEQ did not include a limit on those emissions in the draft PSD permit.[40]

With respect to the Facility's lead emissions from its cooling tower, DEQ requested additional information from the Company. DEQ requested an evaluation of the concentrations of heavy metals in the mine water, including a requirement that the Company address the airborne emissions of these metals from the cooling towers and compliance with state air toxics requirements.[41]

Several public witnesses requested that a baseline study of lead in soil, surface water, and groundwater be conducted if the Company is not required to remove lead from the cooling water. It is not clear from the record whether DEQ is considering such a study, or will require such a study as part of its issuance of the Company's final PSD permit. Since the final PSD permit has not been issued, the Commission should contact DEQ to ensure it addresses lead emissions from the Facility's cooling towers and any requirement for baseline testing for lead in the area of the Facility in DEQ's final PSD permit.

[39] *See*, Ex. 23, Draft PSD Permit at 5-6.
[40] *See*, Tr. at 562-64; 570-71.
[41] *See*, Ex. 23, Transmittal Letter at 4.

6. Air Quality Monitoring.

a. On-site pre-construction base line air quality monitoring.

In its application for a PSD permit, the Company requested a waiver from a source-specific pre-construction monitoring program.[42] DEQ determined there was sufficient representative data so that pre-construction monitoring was not required.[43]

b. Temperature inversions and the Facility's air emissions.

One public witness, a professional engineer, expressed his concern that the area surrounding the Facility is prone to temperature inversions that may trap pollutants in the general vicinity, rather than disperse the pollutants with the prevailing wind over a much wider area. If this occurs, the citizens in the area surrounding the Facility will be at greater risk for the health effects of increased levels of pollution. To address this problem, the public witness recommended that a permanent air quality monitoring station be placed at the State Park, at the Company's expense, after the Facility is operational. This monitor could forewarn of an impending temperature inversion and the Facility's operations could be curtailed to reduce the pollution levels in the area.

It is not clear from the record whether DEQ is considering this issue as part of its PSD permitting process. Mr. Turner, director of the DEQ Office of Air Permit Programs, testified that a "post-construction monitoring requirement would be a requirement of the [air] permit," and would typically not be required unless DEQ had concerns with volatile organic compounds.[44] The Commission should contact DEQ to determine whether the possibility of temperature inversions occurring in the area and the requirement for post-construction air quality monitoring were considered as part of the DEQ's PSD permitting process.

B. Water.

1. Water availability for the Facility.

The Company intends to use the Austinville Mine as its water source for cooling the Facility's gas turbines. Company witness Dailey calculated that the mine contains approximately 1.8 billion gallons of water. The Facility would use approximately 4 to 7 MGD, with 400,000 to 700,000 gallons of water per day being returned as effluent from the Facility's cooling towers. The Company intends to withdraw the water from the Van Mater Shaft. This shaft extends to a depth of approximately 1200 feet below ground level.

At present, the water level in the mine is 250 feet below ground level, which places it approximately 15 feet above the level of the New River. The Company intends to drawdown the static head of the water in the mine 200 feet so that water from the aquifer and the New River will flow into the mine. Based on studies done by the New Jersey Zinc Company in the years before mining operations ceased, 17% of the mine inflow came from the New River and 83% came from

[42] *See*, Ex. 11, Attachment WC-R-1 at 5-1.
[43] *See*, Tr. at 566.
[44] *See*, Tr. at 567.

the underground aquifer. These studies indicated that 86% of the water that came from the New River came from one distinct location adjacent to the river, Chiswell's Hole. The tunnel leading to Chiswell's Hole was subsequently blocked by the installation of a bulkhead door and grouting. The status of this door is in question; it is either watertight or it leaks like Niagara Falls. Considering the closed bulkhead at Chiswell's Hole, Mr. Dailey estimates that the actual make-up of the water flowing into the mine is 10% from the New River and 90% from the underground aquifer. There may be at least two other closed bulkhead doors in the mine.

For the reasons previously stated in this Report, the Company's proposed use of the Austinville Mine as a water source needs further independent study.

2. Water Contaminants.

a. Pre-treatment of cooling water to remove lead and other heavy metals.

The Company is not proposing to remove the excessive levels of lead, zinc, and cadmium from the Austinville Mine water prior to its use in the Facility's cooling towers. The Company will treat the mine water with an algaecide, but the presence of lead, zinc, and cadmium in the water does not affect its use as cooling water. The Company believes the cost to pre-treat all the water it intends to use, 4 to 7 MGD, is neither practical nor cost efficient. The Facility's lead, zinc, and cadmium emissions from its cooling towers, and the possible need to reduce those emissions by purifying the Facility's cooling water, should be addressed in DEQ's PSD permit for the Facility.

b. Effect of cooling tower effluent on levels of heavy metals in the Austinville Mine.

The Company is proposing to treat the cooling tower effluent, between 400,000 gallons and 700,000 gallons per day, before it is returned to the mine. During the cooling process, the cooling water is recycled up to five times, which increases the concentrations of lead, zinc, and cadmium in the water. Before it is returned to the mine, the effluent will be treated to reduce the levels of lead and zinc to levels that are comparable to the levels in the water when it was first withdrawn from the mine. The treatment process will involve precipitating the lead and zinc out of the water through the use of lime and flocculents. It is unclear whether this water treatment process also addresses the cadmium that will be concentrated in the effluent. As part of its EPA UIC approval, the Company has agreed to conduct water quality monitoring for lead, zinc, and cadmium as well as pH, temperature, conductivity, and total dissolved solids on a quarterly basis. The Company has agreed to provide DEQ with an annual report summarizing the monitoring results. The Facility's effluent discharges into the Austinville Mine are governed by an EPA UIC approval. NCNR has filed a petition for review with the EPA and requested that EPA require an actual permit. The Commission has no jurisdiction to review EPA's UIC approval.[45]

[45] *See*, Virginia Code Ann. § 56-580 D.

c. The Austinville Mine's status as an EPA Superfund site and its impact on the aquifer and surrounding wells.

In January 1987, contractors for the EPA issued a "Preliminary Assessment of Austinville Mines Dump."[46] EPA's environmental contractors inspected the garbage dump on the Austiville Mine site. The dump was used to dispose of refuse generated on the mine site. The results of the survey indicated that the garbage dump represented a "possible potential for groundwater contamination," and this contamination could affect approximately 1,000 people.[47] The report does not address the excessive levels of heavy metals in the mine water, the impact of these metals on the underground aquifer or the New River, or the impact of the mine water on the 1,000 or so people who use the underground aquifer as a water source. The contractors observed no signs that the contents of the dump were leaching into the groundwater. It appears from the record that the garbage dump on the Austinville Mine site did not qualify as an EPA Superfund site. It further appears from the record that neither DEQ, nor EPA, has considered the impact of the excessive levels of lead, zinc, and cadmium in the mine water on the aquifer or the New River.

C. Water Discharge from the Austinville Mine.

1. Water from the Austinville Mine migrating to the New River.

The Austinville Mine, the New River, and the underground aquifer are hydrologically connected. Depending on the testimony, the Austinville Mine has either overflowed an average of once per year since it was closed, or every time it rains hard. The permitted overflow point is an "adit" from the mine.[48]

At present, it is more likely that water in the mine will migrate to the New River. The water in the mine is approximately 15 feet higher than the level of the New River, and water generally flows downhill. After the Company commences operations, the water level in the mine will be drawn down approximately 200 feet, making the water level in the mine approximately 185 feet below the surface of the river. At that time, water from the New River and the surrounding aquifer should generally flow downhill into the mine. What is not well understood is the horizontal movement of water in the mine. Even after the Company commences operations, the mine will still be 85% full of water. All of the water infiltration studies conducted by New Jersey Zinc Company, and relied on by the Company, were conducted when the mine was de-watered to a depth of 1200 feet. What is not well understood is what is happening with the water in the mine at the 900 to 1200 foot depth. Testimony in the record states there is horizontal movement of groundwater in the area. Is this movement towards the New River or away from the New River, or should we even be concerned given the small level of contaminants that may ultimately reach the river? This is one of the areas that needs further independent analysis.

[46] *See*, Ex. 8, Attachment PL-R-12.
[47] *See*, Ex. 8, Attachment PL-R-12 at Section 5.5.
[48] The "adit" is a gently sloping tunnel from the surface to the 2nd Level of the mine where equipment was driven into and out of the mine, and where New Jersey Zinc de-watered the mine.

2. Areas other than the withdrawal and injection points where surface water discharges can occur at the Austinville Mine.

During the period the Austinville Mine was in operation, there were literally hundreds of small boreholes (approximately 2 inches in diameter) drilled into the ground in the search for ore-bearing rock.[49] It is unclear whether these holes were filled in after they were drilled. Company witness Dailey found Bore Hole A-204 and proposed it as a possible effluent injection point. If any of these boreholes intersect with a mine tunnel, they represent a possible outflow point for water in the mine. For this reason, it may be important to keep the mine adit open, rather than seal it up. The adit is a known outflow point and could act as a safety valve for the mine. If the adit is closed, the water in the mine may rise and exit the mine through one of these boreholes.

The opening to the adit is approximately 200-250 feet below the ground level at the Van Mater Shaft. Because of the topography of the area, hilly terrain with steep grades, there may be boreholes that were drilled at locations below the ground level found at the entrance to the adit. If so, water from the mine should be flowing from these holes on a fairly regular basis. The maps showing the borehole locations does not include topographic gradients, so it is impossible to know where to look to find the boreholes that are most likely to have water flowing out. A single borehole with water flowing out may not present a problem, several hundred may present a problem.

D. The New River.

1. The New River's designation as a "Wild and Scenic River."

In 1968, Congress established a program to preserve and protect wild and scenic rivers and declared its intent that:

> It is … the policy of the United States that certain selected rivers of the Nation which, with their immediate environments, possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, shall be preserved in free-flowing condition, and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations.

16 U.S.C. § 1271.

It appears that two sections of the New River are covered by the federal Wild and Scenic River designation. It includes that portion of the New River in North Carolina from its confluence with Dog Creek downstream approximately 26.5 miles to the Virginia State line, and that portion commencing at the Route 460 bridge over the New River in Virginia (between Pembroke and Ripplemead, Virginia) to the maximum summer pool elevation of Bluestone Lake in West Virginia.[50] By my estimate, the Wild and Scenic River designation applies only to 10-15 miles of

[49] *See*, Exhibit 4, Attachment AD-R-3. The boreholes are noted on the maps included in that attachment with an alpha-numeric numbering system, for example "A-810."
[50] *See*, 16 U.S.C. §§ 1273 (a) and 1276 (a) (134).

the New River in Virginia, that portion north of the Route 460 bridge. It does not apply to that portion of the river in the vicinity of the proposed Facility. Consequently, the designation of portions of the New River as a federally protected Wild and Scenic River has no application in this case.

2. Whether the Facility will have a negative environmental impact on the New River.

The Facility's impact on the New River primarily relates to its water withdrawals from the Austinville Mine. As previously stated in this Report, this is one of the areas which needs additional study. The study should focus on the following three issues: (1) minimum in-stream flow necessary to maintain beneficial uses of the New River; (2) impact of water withdrawals during periods of low flow on fish, wildlife, and recreational use; and (3) cumulative impact of the Facility's water withdrawals, together with reasonably foreseeable withdrawals on the New River.

Unlike the *Tenaska Fluvanna* and *Tenaska Buckingham* cases, in which there is currently a comprehensive water management plan in place for the James River and a requirement for the two facilities to curtail or cease operations when the James River reaches certain low flow points, to protect the beneficial uses of the river for wildlife, recreation, and drinking water supplies, there is no similar plan in place for the New River. I find this troubling. Considering that Wythe County and every community along the New River is looking at it as a source of drinking water, there needs to be a comprehensive management plan in place for the New River. According to DEQ witness Wagner, there is no water management plan in place for the New River, and no cumulative impact study has been done on water withdrawals from the New River. The New River represents a finite source of water and no one is coordinating who may withdraw water from the river and how much may be withdrawn.

The Company argues that its water withdrawals represent a small fraction of the river's daily flow. This past summer, washing my car with well water represented an insignificant water use, yet I was still prohibited by the Governor from doing so. The important point for this case is that there must be a plan in place that is based on sound science and designed to protect the beneficial uses of the New River. That plan does not presently exist. During periods of low flow, the Company has proposed pumping additional water out of the mine to replace the water it would use from the New River. While this plan sounds appealing, its feasibility is questionable. Would DEQ approve such a plan? Moreover, would other communities downstream support pumping heavy metal-laced mine water into their drinking water supply? The New Jersey Zinc Company had to cease operations because it could no longer pump water out of the mine and into the New River. The company conducted the water infiltration studies trying prove that the water in the mine was primarily from the New River and already contained high levels of heavy metals. The studies proved otherwise and the company had to cease operations because it could no longer discharge into the river.

3. The effect of the Facility's cooling tower effluent returned to the Austinville Mine on the water temperature of the New River.

It is highly unlikely the Facility's cooling tower effluent returned to the mine would increase the water temperature of the New River. Company witness Dailey calculated that after 30 years of operation, the temperature of the water in the Austinville Mine would increase from 53° to 55.2°. The closest point between the mine and the New River is Chiswell's Hole, where the mine and the river are a half a mile apart. The mine shaft leading to Chiswell's Hole is the one where the bulkhead door was closed to keep water from the river from infiltrating the mine. Even assuming a number of hydrological connections between the mine and the river, by the time the water in the mine percolated around the bulkhead door and through a half a mile of rock, it is unlikely it would have any residual heat. If water from the mine were reaching the New River, it would be colder than the river in the summer and warmer in the winter.

4. Impact of increased levels of heavy metals in the Austinville Mine on the New River and groundwater in the area.

Assuming the Company can return the effluent from the Facility with the same level of heavy metals as the raw water from the mine, over time the water quality should generally improve. The primary reason for the high levels of lead, zinc, and cadmium in the mine water is its 20-year exposure to the ore-bearing rock in the mine. Except for the horizontal movement of groundwater into and out of the mine, the water in the mine has been essentially stagnant. Once the Facility commences operations it will take between six months and one year to completely cycle through all the water in the mine. When this occurs the water in the mine should have properties similar to those in the water that was pumped out of the mine in the closing days of New Jersey Zinc Company's operations. Whether and to what extent the mine water may have already contaminated the groundwater aquifer or the New River is a matter for EPA and DEQ to investigate.

E. The New River Trail State Park at Foster Falls.

1. Environmental impact on the Park.

a. Noise levels in the Park – project noise levels, effect of terrain on noise levels, and the availability of buffers between the Facility and the Park.

The Company studied the impact of the noise from the facility on the State Park and nearby residences. The studies estimated the Facility's noise level at the entrance to the park to be 31 dBA, which was lower than existing noise levels at the park. Company witness Collins testified that nearby roadways, including Interstate 77, are probably the largest contributors of background noise at the park. The Company's studies further showed that noise levels attributable to plant operations will be less than EPA guidelines for outdoor sound exposure at all residences surrounding the Facility site.

The Company and the State Park share a common boundary line, which I believe is a ridgeline separating the two properties.[51] During my site visit, it appeared that the trees on the Company side of that ridgeline had been recently clear-cut. It is not apparent in the record whether the noise studies conducted for the Facility were conducted assuming the trees were present or not. This omission could have an impact on noise levels at the State Park. At a minimum, best forestry management practices would require that the area be reforested. Although the Company has not offered to do so, it could mitigate the Facility's noise impact on the State Park by reforesting the clear-cut area and maintaining it as a permanent buffer between the two properties.

b. Impact of the Facility's light emissions on the Park and the requirement for a light pollution plan.

The Facility will need to be lighted for safety and security reasons and to comply with OSHA regulations. Company witness Collins testified that exterior lighting for the Facility would be directed downward and inward through the use of shielded lighting in order to minimize glare from the Facility. Although there is no direct view of the Facility from the State Park, Mr. Collins testified that on foggy nights or nights with high humidity, guests at the State Park may see some glow from the Facility, but those same conditions would also obscure stargazing.

This is the first merchant power plant case in which light pollution has surfaced as an issue. In large part, this may be due to the Company deciding to locate its facility next door to one of the premier state parks in the Virginia State Park system. In other cases, the facilities have chosen to locate in industrial parks, or large acreage wooded tracts where the developer agreed to clear the minimum area needed for the facility and leave the remainder as a daytime and nighttime visual buffer. The proposed site for the Facility is on a knoll surrounded on at least three sides by open pastureland. The site is clearly visible from Interstate 77.

Unless careful consideration is given to the lighting plan for the Facility, I can easily envision that it will appear as if the aliens from *Close Encounters of The Third Kind* have landed immediately over the ridge from the State Park. The Commission should direct the Company to retain a sufficiently qualified consultant to design a lighting plan for the Facility that minimizes its light emissions. The plan should be submitted to the Commission's Staff for review by its independent consultant as part of any further proceedings in this case. Additionally, the Commission should consider whether it would be appropriate to require a landscape buffer immediately outside the project site fence to further reduce the line-of-sight light emissions from the Facility.

2. Impact on recreational use of the State Park.

For the reasons previously stated in this Report, the Facility's impact on the recreational use of the State Park requires further study.

[51] *See*, Exhibit 19. The State Park is northwest of the plant site.

F. Economic Development.

1. The percentage of temporary construction and permanent jobs at the Facility that will be filled locally.

There is no question from the record that Wythe County lags behind the rest of the state in per capita employment and wages. The Company expects to employ approximately 400 temporary construction workers during the construction of the Facility. Based on a similar facility constructed by DENA in Marietta, Ohio, approximately 70-80% of the construction jobs (approximately 280-320) will be hired locally. Given the interest in this proceeding by the JIDA and the various construction trade associations, the availability of these jobs would be advertised throughout Southwest Virginia. There is universal agreement the Facility would represent a substantial short-term boost to the region's economy.

The Company expects to employ 24 permanent workers at the Facility.[52] Based on its experience at the Ohio facility, approximately 70% of the permanent work force (approximately 17) will be hired locally. On average, these workers will be well paid. The annual payroll for the Facility is expected to be $1.6 million, which equates to an average gross annual salary of $66,000. Given the salaries the Company intends to pay, it should have no difficulty filling its permanent work force locally. Contrary to the public witness testimony that the local hires would be relegated to the janitorial positions, I believe there are sufficient numbers of people in the general region with the necessary skills to work at the Facility, such as electricians, mechanics, welders, and production control personnel. The only negative that I see is that quality skilled personnel may leave existing employers to seek out the higher paying jobs at the Facility. This too would be a benefit because the overall level of employment in the area would increase as the vacated positions were then filled.

2. The impact of the Facility on purchases of construction materials and material fabrication on the local economy.

Although many of the major components for the Facility will be fabricated out-of-state, such as the turbines and the boilers, there will be significant purchases of construction materials locally and some fabrication of minor components. As Mr. Irvin of the JIDA testified, the construction materials purchased locally would include 12,000 yards of concrete; 500,000 feet of conduit; and untold amounts of gravel. He can easily envision that local suppliers and subcontractors may find it necessary to hire additional personnel to meet the Facility's demand for materials and services.

In his testimony, Mr. Lesner gave other examples of the types of materials needed by the Facility that could be procured locally, including fencing, lumber, small hand tools, and safety equipment. He also stated there might be other supplies that would be procured through local vendors.

In sum, it appears the Facility will have a positive economic impact on construction material suppliers and other industrial suppliers in the region.

[52] There were several references in the public witness testimony to the Company employing 25 full-time workers. However, Mr. Lesner testified the Company expects to employ 24 full-time workers. *See*, Tr. at 425.

3. The Facility's impact on the agricultural limestone business currently operating at the Austinville Mine site.

It appears from the record that the Facility will have no impact on the agricultural limestone business currently operating at the Austinville Mine site. Mr. Lesner testified the limestone business is conducted aboveground, and should not interfere with the Company's plans to withdraw water from the mine. The limestone business uses the limestone tailings which were removed from the mine in the process of reaching the lead and zinc ore-bearing rock. The limestone business processes the limestone tailings into agricultural limestone. Duke Energy Wythe and the limestone business have agreed that their mutual operations will not interfere with each other.

4. Taxes paid to Wythe County.

The Facility represents the largest single private industrial development ever proposed in Wythe County. The Company expects the Facility to cost in excess of $250 million. At that cost, the Facility would increase the County's tax base by 23% and generate approximately $1.5 million per year in tax revenue for the County.

The record is well documented that Wythe County needs the additional tax revenue that would be generated by the Facility, to improve teacher salaries and upgrade schools. The County's teachers are paid at the bottom of the salary range for teachers in the state, but their students are still expected to pass the SOL tests. Additionally, Wythe County has undertaken a program to modernize its schools to provide its students the same educational opportunities found in other parts of the state. The County appropriated the first $20 million to reach its goal, but needs the tax revenue the Facility would generate to fund the remainder.

At first glance, it would appear the Facility clearly represents a positive tax benefit to the County. However, if tourism at the State Park is impacted, as predicted by many who testified, what effect will this have on County and State tax revenue from sales taxes, restaurant meal taxes, hotel occupancy taxes, and other taxes? At this time, that impact is unknown. In order to get a clear picture of the Facility's impact on tax revenue, both the costs and the benefits of the Facility should be studied. The analyses presented in this record focused solely on the economic benefits of the Facility and ignored the economic costs. The Commission needs a complete and independent picture of the Facility's economic impact upon which to base its decision. For this reason, the Commission should direct the Staff to conduct a comprehensive economic impact study of the Facility.

5. The Facility's impact on economic development in Wythe County and the area's recreational tourism industry.

As a source of reliable competitive electric power, the Facility may be a big selling point for inducing new businesses to locate in the County's new industrial park. However, the Facility's potential impact on the area's outdoor recreational tourism industry is unknown. The testimony in the record indicates that the New River Trail State Park had more than one million visitors last year. These visitors pumped approximately $17.5 million dollars into the local economy, which does not include other tourist dollars spent in the local area. In the region, tourism is the fastest growing

industry, exceeding the growth rate in the remainder of the state by 17%. For these reasons, a number of public witnesses testified it makes no sense economically to locate a large power plant next door to the State Park and risk endangering this source of revenue, especially after the Commonwealth has spent so much money on improvements at the State Park to encourage more visitors.

In response, Duke Energy Wythe argued it considered the Facility's impact on the viewshed and noise at the State Park. The Company argued the Facility will, for the most part, be invisible from the State Park. Only the top of the stacks would be visible from a few areas of the park and they would be indistinguishable from the electrical transmission towers and substation already present. The Company argues visitation at the State Park has increased even though the existing transmission lines and substation are visible from areas in the park. The Company further stated that it looked in the Yellow Pages for businesses that cater to the recreational tourism industry and believes its operations will not impact these businesses.

Noticeably absent from Duke Energy Wythe's analysis and simulations is the vapor plume that will emanate from the Facility's cooling towers. This plume will be visible for miles. Although the prevailing winds will generally blow the plume away from the State Park, there will be times when the plume will blow directly over the State Park, the entrance to which is approximately a half mile from the Facility. Also absent from the simulations are the Facility's nighttime light emissions. Several public witnesses expressed concern with the Facility's light emissions and their impact on the use of the State Park. Neither the Company nor the Staff considered the impact of the Facility's vapor plume or light emissions on visitation at the State Park. The Company has stated that to the extent practicable it would use shielded lighting to reduce the glare from the Facility at night, but the specifics of its lighting plan have not been reviewed by the Staff or subject to public scrutiny. These impacts need further study by the Staff and an adequate record upon which to base a decision.

Also requiring further study is the Facility's impact on the recreational tourism industry centered around the State Park and the New River. Although Duke Energy Wythe believes its operations will have no impact on tourism, both Mr. Brillheart, a fishing guide on the New River, and Mr. Fiorini, the owner of an outdoor recreation store in Wytheville, believe otherwise. Not only may their businesses be impacted directly by the Facility, but other businesses in the local area, such as restaurants and hotels, may be similarly impacted if there is a general decline in the number of visitors to the State Park. The full effect of the Facility locating immediately adjacent to the State Park needs further study and analysis before a decision may be reached in this case. The Commission should direct the Staff to conduct a comprehensive study of the Facility's impact on tourism at the State Park as part of its economic impact review of the Company's application.

G. Other.

1. Requirement for an engineer's seal on the Facility's environmental assessment.

One of the public witnesses, a professional engineer, questioned the validity of the Company's environmental assessment since it did not bear a professional engineer's seal. Section 54.1-401 of the Code of Virginia provides that the following are exempt from the statutes governing professional engineers:

> Practice of engineering solely as an employee of a corporation engaged in interstate commerce, or as an employee of a public service corporation, by rendering such corporation engineering service in connection with its facilities which are subject to regulation by the State Corporation Commission; provided, that corporation employees who furnish advisory service to the public in connection with engineering matters other than in connection with such employment shall not be exempt from the provisions of this chapter.

I find the engineering services provided in connection with this case qualify for the exemption set forth above and there is no requirement that any of the environmental assessments bear an engineer's seal.

2. Road improvements necessary for access to the Facility and to reduce road congestion.

VDOT has reviewed the road access to the Facility and required that the roadway line-of-site on Route 608 be extended to 260 feet. The Company intends to excavate back approximately 45 feet of its property on the northern side of the intersection to achieve the required line-of-site. According to VDOT, this change addresses their traffic concerns. Pursuant to Section 56-580 D of the Code of Virginia, the Commission must accept VDOT's consideration of the traffic concerns associated with the Facility.

3. Plans for stormwater run-off.

The Company is developing an erosion and sediment control plan for the Facility that is consistent with County and State requirements, particularly those found in the Virginia Erosion & Sediment Control Handbook. Additionally, the Company must obtain a VPDES stormwater general permit covering the period of construction, and it has hired a consultant to prepare the application.

4. Plans for storing gas at the Facility and whether water will be used to "scrub" the gas prior to its use in the combustion turbines.

The Company has no plans to store natural gas at the Facility, and no plans to scrub the natural gas with water prior to its use in the combustion turbines.

5. Whether the environmental assessment considered the unique aspect of the site (i.e., topography, proximity to nearest homes, schools, parks, etc.).

The evidence shows that the Company's environmental assessments for the Facility considered the impacts of terrain on its air emissions, and the proximity of the Facility to the State Park and surrounding homes.

6. Effect on surrounding land values.

Given the location of the Facility, it should have a minimal impact on residential land values in the area. Unlike the *Tenaska Fluvanna* facility, there is no subdivision or high-density rural residential housing immediately adjoining the project site.

7. Viability of the Facility if the Patriot Pipeline extension is not approved.

At the hearing, there was some question whether the Facility would be built if the Patriot Pipeline were not approved. This issue is now moot with FERC's approval of the pipeline.

8. The Commission should be more pro-active in promoting alternative energy sources and energy conservation.

Several public witnesses believe the Commission should be more pro-active in promoting alternative energy sources and energy conservation. I agree. Moreover, if the Commission needs a statutory mandate before it can undertake such a consumer education program, authority exists in the Code.[53] The Commission has spent significant sums of money promoting *Energy Choice* throughout Virginia, as the retail electric market transitions to a competitive deregulated market. Alternate energy sources represent the purest form of competition and should likewise be promoted. Likewise, energy conservation and load management are practices used in a competitive market to achieve savings for electric consumers and induce consumers to switch from one supplier to another. Given the broad discretion provided the Commission under § 56-592 A 4 of the Code of Virginia, the Commission could provide information on alternative energy sources and energy conservation to electric consumers in Virginia. This information certainly meets the public interest standard contemplated by the statute.

9. Benefits and environmental costs to surrounding counties.

In terms of benefits to surrounding counties, there may be construction subcontractors or suppliers located in those counties who would benefit from the Facility. Individuals with the right skill sets living in those counties could be hired at the Facility. Additionally, the location of the Facility in the region, and its reliable competitive energy supplies, may induce other businesses to locate in the region.

As for the environmental impact of the Facility, the greatest impact is in the area immediately surrounding the Facility. The environmental impact of the Facility drops off significantly the farther one moves away from the Facility as is most evident in the Cumulative

[53] *See*, Va. Code Ann. §§ 56-592 and 56-592.1.

Impact Analysis. If the Facility will not cause an exceedance of any PSD increment or NAAQS in Wythe County, it is even less likely that it will have any impact on any neighboring county.

DEQ-Coordinated Environmental Review.

A. Historic architectural and archaeological resources within the project area.

The Company had the project site evaluated for architectural and archaeological resources. Its consultant reviewed archival information provided by the Virginia Department of Historic Resources ("VDHR") and information maintained in VDHR's files. There are no recorded architectural and archaeological sites located in the project area or the construction staging area. The Facility and the construction staging area are located in an area having a low probability for significant cultural resources. The proposed water supply and discharge pipeline corridor has been routed to avoid direct impacts to known recorded architectural and archaeological sites. The Company submitted a formal request to VDHR for project review, and VDHR responded that no further work was required with regard to historic properties.[54] I find the proposed Facility and its attendant water supply and discharge pipelines will have no material adverse effect on any historic architectural or archaeological site.

B. Wetlands.

The Company's environmental consultant conducted a wetlands delineation survey. Any wetlands sites on the project site will be avoided. The proposed water supply and discharge pipeline corridor for the Facility will cross two perennial streams. These streams are waters of the United States subject to Section 404 of the Clean Water Act. Any impacts to these streams will be minimized during pipeline construction.[55] I find the proposed Facility and its attendant water supply and discharge pipelines will have no material adverse effect on any wetlands.

C. Threatened and endangered plant, animal, and insect species at the project site or along the pipeline route.

The Company engaged its environmental consultant to conduct a site survey, contact the Virginia Department of Game and Inland Fisheries ("DGIF") and U.S. Fish and Wildlife Service ("USFWS"), and review information and records maintained by DGIF. The results of this review indicate there are no threatened or endangered species present on the plant site. The plant site could be considered suitable forage habitat for the bald eagle and the peregrine falcon, but there have been no documented sightings of either bird on the property. Additionally, the survey found that based on the habitats present along the pipeline corridor, there should be no adverse impact to any threatened or endangered species as a result of pipeline construction.[56] I find the proposed Facility and its attendant water supply and discharge pipelines will have no material adverse effect on any threatened and endangered plant, animal, or insect species.

[54] *See*, Ex. 8, at 5-6; Ex. 8, Attachments PL-R-1, PL-R-2, PL-R-3 and PL-R-4.
[55] *See*, Ex. 10, Attachment WC-2 at 3 and 9; Ex. 11, at 22.
[56] *See*, Ex. 10, Attachment WC-2 at 3 and 9; Ex. 11, at 22.

D. Monitor water quality in the Austinville Mine.

As part of its EPA UIC approval, the Company has agreed to conduct water quality monitoring for lead, zinc, and cadmium as well as pH, temperature, conductivity, and total dissolved solids on a quarterly basis. The Company has agreed to provide DEQ with an annual report summarizing the monitoring results.

The public witnesses also requested that groundwater monitoring wells be drilled in the area surrounding the Austinville Mine to determine whether the lead, zinc, and cadmium-tainted water in the mine is leaching into the groundwater aquifer. If the concentrations of heavy metals in the mine increase after the injection of the cooling tower effluent, the wells would provide continual monitoring for the spread of these metals into the aquifer. The public witnesses also requested monitoring for these metals in the New River.

The Department of Conservation and Recreation ("DCR") held discussions with the Company concerning monitoring water quality in the Austinville Mine. In its comments to DEQ in the Coordinated Environmental Review, DCR "encouraged" quarterly measurements of water around the perimeter as appropriate, and upstream and downstream of the fault/fissure intersections that connect the New River to the mine, to verify that water is not flowing from the mine into the surrounding groundwater aquifer or the New River. The Company has no plans to conduct such monitoring.

Any requirement to install water monitoring wells or conduct water sampling in the New River to determine whether mine water is leaching into the groundwater aquifer or the New River, would come under the jurisdiction of the EPA and its UIC permit program, or could have been required as part of DEQ's Coordinated Environmental Review in this case. In its comments, DCR could have recommended that such monitoring be "required" rather than just "encouraging" the Company to undertake a monitoring program. Pursuant to § 56-580 D of the Code of Virginia, the Commission must defer to the EPA in matters related to its UIC permit program. Additionally, since DCR and DEQ considered the issue of monitoring wells and sampling the New River and did not "impose" any requirement on the Company, or recommend that the Commission impose such requirement, the Commission is specifically precluded by statute from imposing any additional conditions with respect to such matter.

The Coordinated Environmental Review contains a recommendation from DCR that the Company conduct sampling for aquatic invertebrates using baited traps, and monitor populations of these invertebrates as a means of tracking changes in the quality of the water in the Austinville Mine. There is no affirmation in the record that the Company has agreed to conduct such sampling. As part of any CPCN that may be issued in this case, the Commission should, therefore, require the Company to comply with this recommendation from DCR and DEQ.

E. Conduct tests to determine the hydrology between the Austinville Mine and the New River.

DCR initially recommended pump testing the Austinville Mine at 7 MGD over several days, with dye testing, to analyze how surface water and groundwater moves in the area of the mine.

DCR recommended that the testing be done prior to construction or site preparation, and the results shared with the County and other regulatory agencies. DCR subsequently withdrew this recommendation.

Notwithstanding the apparent limitations of § 56-580 D of the Code of Virginia, I believe the Commission may still require pump testing of the Austinville Mine to determine the hydrology of the mine and whether there will be sufficient flow to support power plant operations. The impact of the closed bulkhead doors on the water supply has not been evaluated by any state or federal agency and must be determined to ensure reliable source water for the Facility. As part of these tests, dye may have to be released in the New River to determine whether the bulkhead door leading to Chiswell's Hole is performing its intended function, or if it leaks like Niagara Falls. Additionally, the impact of the closed bulkhead doors on the 7th and 11th levels needs to be evaluated. Finally, pump testing would verify the velocity of the water moving through the mine and would ensure that the structural integrity of the mine would not be compromised during the Facility's useful life.

F. Conservation strategy for Wythe County woodlands.

The Department of Forestry ("DOF") is concerned with the loss of "working landscapes" in the Commonwealth. These landscapes work for wildlife habitat, recreation, and wood products, among other things. The loss of wooded acreage for the Facility and the development that may occur in the area of the Facility raised this concern. In order to begin a conservation strategy in Wythe County, DOF proposed that the Company and the County, along with DOF and other entities, raise funds by applying a small fee per unit of electricity generated by the Facility, if it is approved. The money generated from this fee would be used to purchase conservation easements in Wythe and surrounding counties. In a perfect world this type of proposal has a great deal of appeal, but we do not live in a perfect world. The Company would have to agree voluntarily to any fee or surcharge, and it has stated that it is opposed to such a fee. The Commission has no jurisdiction to impose such a recurring fee on the Company.

The Commission does, however, have jurisdiction to mitigate the environmental impact of merchant generating facilities. If DOF is concerned with maintaining the health and vitality of forested lands in Virginia, and preserving working landscapes, then it should quantify a merchant generating facility's impact on Virginia's lands. This would involve either an impact analysis of the facility itself, or the impact of the facility's emissions on lands in Virginia. DOF would then be in a position to recommend to the Commission that, as a condition of any CPCN, a merchant power plant should be required to fund a conservation easement program with a one-time fee to offset the facility's impact on these lands.[57]

[57] As a condition of its Special Use Permit, Fauquier County required Old Dominion Electric Cooperative ("ODEC") to pay a one-time fee of $1.5 million, payable in three annual installments of $500,000, to fund a conservation easement program designed to preserve open space in the area around ODEC's Marsh Run generating plant. In addition to funding the conservation easement program, ODEC agreed to place a conservation easement on approximately 225 acres of land surrounding its facility, plant vegetative buffers to obscure the facility's view from neighboring properties, and manage the land for the benefit of wildlife and nature-related outdoor activities.

As an alternative proposal, the Hearing Examiner inquired whether the Company was willing to place a conservation easement on its unused acreage to create a permanent visual and noise buffer area around the Facility.[58] The Hearing Examiner referred to this as the "doughnut model" of merchant power plant development. The Company has an exclusive option on 715 acres, of which approximately 35 acres will be used for the Facility. The Company opposes a requirement that it place a conservation easement on the remaining land. Since the Facility is surrounded by utility rights-of-way, the Company believes a conservation easement for the unused property is not practical and would serve little purpose. Additionally, the Wythe County Board of Supervisors is adamantly opposed to the Commission requiring a conservation easement on the land that is not being used for development. The Board believes any site restrictions should be a matter of local concern and not mandated from Richmond by way of the Commission.

I am not persuaded by either argument. Exhibit 19 shows that, while the area immediately surrounding the Facility is crisscrossed with power lines, the area northwest of the Facility is not similarly constrained. A conservation easement on this land would have no impact on the current uses occurring there. The cows that are there can continue to graze underneath the one power line, and the wooded areas can continue to grow and be harvested and replanted. A conservation easement would preclude an industrial park or a residential subdivision from locating adjacent to the Facility. Given the proximity of the proposed Facility to the State Park and the rural character of the surrounding properties, the area should be maintained as a permanent buffer to reduce the Facility's impact on the State Park and its neighbors. As an alternative to a conservation easement, the Company could voluntarily agree not to develop the land that it owns, to maintain this visual and noise buffer, which would achieve the same result as a conservation easement. If it decides to dispose of any land it currently owns, the Company could agree to place a conservation easement on that land prior to disposition. Finally, for a County with no land use controls, and which did not require a Special Use Permit for the Facility, I find it odd that the Wythe County Board of Supervisors would be the least bit concerned about land use in the area surrounding the Facility, unless of course, there is some merit to the public witnesses' comments that there are already plans to up-size the Facility at a later date.

G. Manage the land around the project site to benefit wildlife.

DGIF encouraged the Company to manage the unused 680 acres surrounding the Facility for the benefit of wildlife, including planting species of vegetation beneficial to wildlife. DGIF has a Corporate Habitat Partners program that certifies 40+ acres of industrial land as beneficial to wildlife and recognizes the corporation and its employees for managing the land for the benefit of wildlife.[59] DGIF provided information on the program to the Company and offered its biologists' assistance in identifying habitat improvements that could be made to the land to benefit wildlife and providing technical expertise with the certification process.

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[58] In several other cases where a merchant generating facility has chosen to locate on a large acreage rural tracts, as opposed to an industrial park, the developer has agreed to place the remaining acreage under a conservation easement to ensure a permanent visual and noise buffer exists between the generating facility and its neighbors. *See, e.g.,* The Tenaska facilities approved for Fluvanna and Buckingham Counties, and the ODEC facility approved for Fauquier County.

[59] *See*, DGIF's website at www.dgif.state.va.us.

While touting its environmental record at the hearing, the Company has shown little interest in preserving or protecting natural resources in the area of the proposed Facility. There are some citizens that will never accept the proposed Facility. However, if the Company had been more pro-active in addressing some of the environmental concerns associated with the Facility, and making at least some effort to work with local environmental organizations and state agencies such as DGIF and DOF, it could have tempered public opposition to the plant. The Company would have then been in a position to state that it had tried to work with these groups, but their demands were unreasonable. The Company has succeeded in perpetuating the stereotype of a big out-of-state power company that has little concern for the local community and its citizens. Short of denying the Company's application, I do not know what it will take for the Company to recognize that the citizens in Wythe County are concerned with the quality of the environment in which they live. I find the Commission should endorse DGIF's wildlife management proposal.

Issues Raised by Staff.

A. Sunset provision as condition of certificate.

Staff witness Maddox recommended that a "sunset" provision be included in any CPCN issued by the Commission, requiring construction of the Facility to commence within two years of the date the Commission issues the certificate. The Commission has included this type of provision in other certificates to construct merchant electric generation facilities in the Commonwealth. Public policy favors such a limitation because CPCNs should be issued to entities with the capability to bring projects to completion. I find that a sunset provision requiring construction to commence within two years of the issuance date of any CPCN the Company receives from the Commission is reasonable.

B. Annual Report to DEQ detailing the results of UIC monitoring for lead, zinc, and cadmium.

In its Post-Hearing Brief, the Staff argues the Commission should require the Company to conduct baseline testing in the area of the Austinville Mine and conduct annual monitoring of the heavy metals in the mine water and their impact on area groundwater supplies as a condition of any certificate.

By way of background, no state or federal agency regulates water withdrawals from the Austinville Mine. The EPA would regulate the Facility's underground injection of its cooling tower effluent. The Virginia Department of Health ("VDH") requires new groundwater wells to be tested for the presence of bacteria, but does not require the water to be tested for the presence of heavy metals. There are no VDH requirements for periodic testing of groundwater wells. The extent to which the heavy metals present in the Austinville Mine water may have migrated into the underground aquifer is unknown. The EPA's review of the Austinville Mine site addresses the possibility that the dump located on the site has the potential to contaminate local groundwater supplies, but it does not address the potential for the heavy metal-laden mine water to contaminate local groundwater supplies. There are approximately 1,000 homes within the area that use groundwater as their primary drinking water supply.

This is another instance in which § 56-580 D of the Code of Virginia comes into play. It appears that the EPA would have primary regulatory responsibility for confirming, or requiring the Company to confirm, that heavy metal-laden mine water has not leached into the groundwater supply. Appropriate baseline testing in the area of the mine would produce the needed data. It further appears that NCNR has raised this issue in its Petition requesting that the EPA suspend and reconsider its rule authorization. The Commission should contact the EPA to confirm that the EPA considered baseline testing for heavy metals in the groundwater supply and continual monitoring for these metals as part of its rule authorization.

As part of its rule authorization, the EPA required the Company to conduct quarterly sampling of the water in the mine for lead, zinc, cadmium, temperature, connectivity, and total dissolved solids. The Company has agreed to provide DEQ with a summary of the sampling results on an annual basis. I see no need to require further testing in the Company's CPCN.

C. Liability for claims involving heavy metal contamination.

Both the Staff and several public witnesses questioned who would be liable for claims for damages involving heavy metal contamination that may be related to the Austinville Mine or the Facility's operations. The Commission is not the appropriate forum to address such an issue, or provide an advisory opinion. The courts of general jurisdiction in this Commonwealth would have to make such a determination in a case that had been properly brought in that court.

D. Proposal to cease operations during periods of low flow on the New River.

The Staff has suggested that the Company agree to operational limitations during periods of low flow on the New River. In response, Company witness Lesner testified that the amount of water the Facility would use per day that could be identified as having come from the New River would be almost immeasurable and would have no material impact on river flows. He stated the most likely cause for reduced flows on the river would be a malfunction of the dam operating upstream. If the Facility ceased operation, some water from the river would continue to flow into the mine and would not be available to support beneficial uses downstream. As an alternative, Mr. Lesner indicated that the Company would be willing to pump water from the Austinville Mine in an amount equal to what the Company would be taking indirectly from the river through the mine during periods of low flow. The Company could pump the water through the mine adit which leads into Buddle Branch and then into the New River.

I agree with the Company that ceasing operations may not necessarily solve the problem of low flows on the New River. However, the Company's alternative proposal may not work either. The New Jersey Zinc Company ceased mining operations because it could no longer pump water out of the mine into the river and comply with its VPDES permit. Any agreement to pump water out of the mine to support beneficial uses of the New River would need the concurrence of DEQ. As previously stated in this Report, the Company's water use and the impact of that use on other water users and the New River needs further study.

E. Closing the mine overflow "adit."

The Staff has proposed closing the adit into the mine. There are discrepancies in the record on how often the mine overflows. The Austinville Mine either overflows an average of once per year or every time there are several days of rain. The overflow point is the adit. From the adit, water from the mine flows into Buddle Branch, which was channelized by the mining company, and then into the New River. The adit is a permitted VPDES out-fall point.

Company witness Dailey testified there was no engineering reason that would preclude sealing the adit, but also no engineering reason why someone would want to do so. If the Company's proposed method of operation is adopted, the static head of the water in the mine would be drawn down approximately 200 feet. At that point, the water would have to rise approximately 220 feet before it could overflow the mine. Mr. Dailey estimated that it would take 10 months with no pumping before the water level in the mine would rise to the level of the adit. Mr. Dailey believes the adit should be left open as a control point. If the water in the mine rises, it will exit through a known point that is permitted, where it will be easier to monitor and sample. If the adit is closed, the water would continue to rise and exit the mine at some other unknown location.

I agree with the Company that the adit should be left open. The environmental consequences of water flowing out of mine through the adit are known and may be easily monitored. If the adit were closed, the environmental consequences are unknown.

Standard of Review.

A. Reliability.

The addition of the Facility to the electric grid, particularly in the area of Southwest Virginia, should improve overall reliability of the grid. No longer will consumers need to rely on out-of-state supply sources, which involve long distances in the interstate transmission of electricity.

B. Competition.

It appears the Facility will have no material adverse impact on competition. The addition of electric capacity that is not controlled by the incumbent utility should foster competition in the supply of electricity.

C. Rates.

1. Gas Rates.

With the recent approval of the Patriot Extension by FERC, it appears there will be sufficient gas supplies for the Facility and the Facility should have no adverse material impact on gas rates.

2. Water or Sewer Rates.

There are no current plans to use a private water or sewer company to provide services to the Facility. The Company is paying for the construction of the water supply and return lines and will pay Wythe County to provide water transportation services. It appears that the Facility will have no material adverse impact on water or sewer rates.

3. Electric Rates.

It appears the Facility will have no material adverse impact on electric rates. The addition of capacity not controlled by the incumbent electric utility should foster competition, which may lead to reduced rates for some electric customers.

D. Environment.

1. Air Quality.

It appears the Facility will have no material adverse impact on air quality. Emissions from the Facility will not lead to an exceedence of any PSD increment or violation of any NAAQS. DEQ has issued the Facility a preliminary PSD Permit. However, there are several outstanding issues that have been addressed in this Report with respect to air emissions that the Commission should verify with DEQ.

2. Water Use.

For the reasons previously stated in this Report, the Facility's selection of the Austinville Mine as a water source and the impact on the underground aquifer and the New River need further study.

E. Economic Development.

For the reasons previously stated in this Report, the Facility's impact on economic development particularly as it relates to the Facility's impact on the recreational tourism industry centered around the Foster Falls State Park and the New River needs further study.

F. Public Interest.

As set forth in this Report, there are a number of important issues in this proceeding that need to be addressed further. Consequently, I am unable to find at this time that the Facility is not contrary to the public interest.

FINDINGS AND RECOMMENDATIONS

Based on the evidence in the record, and for the reasons set forth above I find that:

(1) The proposed Facility will have no material adverse effect on electric reliability;

(2) The proposed Facility will have no material adverse effect on electric competition;

(3) The proposed Facility will have no material adverse effect on retail electric, natural gas, water, or sewer rates;

(4) The proposed Facility will have no material adverse effect on any threatened or endangered plant or animal species, any wetlands, or any cultural or historic resources;

(5) The proposed Facility will have no material adverse effect on air quality generally, however, the Facility's air emissions and its cooling tower vapor plume may negatively impact recreational tourism at the Foster Falls State Park and requires further review;

(6) There is insufficient evidence in the record to find the proposed Facility's water withdrawals from the Austinville Mine will not adversely impact the environment;

(7) There is insufficient evidence in the record to find whether alternative methods of cooling the proposed Facility's gas turbines represent a more environmentally sound cooling technology;

(8) There is insufficient evidence in the record to find the proposed Facility will not have a material adverse impact on economic development; specifically, the economic costs associated with the Facility are not in the record and the Facility's impact on recreational tourism at the Foster Falls State Park and the New River requires further review;

(9) There is insufficient evidence in the record to find the proposed Facility is not contrary to the public interest;

(10) The Commission should deny the Application on the basis that the Company failed to meet its evidentiary burden, or in the alternative, remand this case for further proceedings consistent with the findings contained in this Report;

(11) If the Commission remands this case, it should direct the Staff to retain sufficient qualified experts to further review the Company's Application and proposed method of operation;

(12) If the Commission remands this case, it should direct the Staff to contact VDOT and DEQ to determine whether those agencies considered the safety concerns associated with the Facility's cooling tower-induced ground level fogging, and if not, the Staff should review the Company's procedures in its Integrated Contingency Plan that address such fogging;

(13) If the Commission remands this case, it should direct the Staff to contact DEQ to ensure that the Facility's lead emissions from its cooling towers and any requirement for baseline testing for lead in the soil around the Facility are specifically addressed in any final PSD permit issued by DEQ;

(14) If the Commission remands this case, it should direct the Staff to contact DEQ to determine whether the possibility of temperature inversions occurring in the area of the Facility and any requirement for post-construction air quality monitoring were considered as part of DEQ's PSD permitting process;

(15) If the Commission remands this case, it should direct the Company to retain a sufficiently qualified consultant to design a lighting plan for the Facility that minimizes light emissions and to submit such plan to the Staff for review by its independent consultant; and

(16) If the Commission remands this case, it should endorse DGIF's wildlife management proposal.

I therefore ***RECOMMEND*** the Commission enter an order that:

(1) ***ADOPTS*** the findings contained in this Report;

(2) ***DENIES*** the Company's Application; or in the alternative

(3) ***REMANDS*** this case for further proceedings consistent with the findings set forth herein.

COMMENTS

The parties are advised that any comments (Section 12.1-31 of the Code of Virginia and 5 VAC 5-20-120 C) to this Report must be filed with the Clerk of the Commission in writing, in an original and fifteen (15) copies, within twenty-one (21) days from the date hereof. The mailing address to which any such filing must be sent is Document Control Center, P.O. Box 2118, Richmond, Virginia 23218. Any party filing such comments shall attach a certificate to the foot of such document certifying that copies have been mailed or delivered to all counsel of record and any such party not represented by counsel.

Respectfully submitted,

_____

Michael D. Thomas
Hearing Examiner